WINZLER & KELLY
CONSULTING ENGINEERS

Ref: 02598-05001-32006

October 10, 2005

Mr. Floyd Wiggins
Wiggins Enterprises, Inc.
1370 Airport Boulevard
Santa Rosa, CA 95403

Re: Ozone Remedial System Installation and Start-up Report - Second Quarter 2005, Wiggins Property, 3454 Santa Rosa Avenue, Santa Rosa, California, SCDHS-EHD Site # 00001849, NCRWQCB Site #1TSR007

Dear Mr. Wiggins:

In accordance with Winzler & Kelly Consulting Engineers' (Winzler & Kelly's) March 2005 *Remedial Action Plan and System Design Report* (RAP), the following activities have been conducted during the second quarter of 2005 at the Wiggins Property, 3454 Santa Rosa Avenue, Santa Rosa, California (Figures 1 and 2):

- Installed 12 ozone sparge points (SP-1 through SP-12);
- Installed an ozone remediation system and completed start-up activities;
- Performed operation and maintenance on the ozone system following manufacturer's system procedures;
- Performed weekly groundwater monitoring and sampling for the first month; and
- Prepare this report to document the installation and monitoring activities.

OZONE SYSTEM INSTALLATION

A summary of the field activities related to the installation of the ozone sparge points and the start-up of the ozone system is provided below.

Field Activity Dates:	May 3 through 5, 2005	Drilled and installed 12 ozone sparge points.
	May 16 through 19, 2005	System underground installation, trenching, and installation of ozone lines.
	June 2 and 3, 2005	Ozone system unit installation and testing.
	June 7, 2005	System start-up, balancing, and operation and maintenance.
	June 14, 23, 30, and July 8, 2005	Weekly groundwater sampling events (MW-5, and MW-8 through MW-10).

Personnel Present: Winzler & Kelly's Geologist, Brian Wingard; Environmental Scientist, Brian Bacciarini; and Environmental Engineer, Pon Xayasaeng

Permits: Prior to drilling, Winzler & Kelly obtained Drilling Permit #4651 dated April 29, 2005 (Appendix A) from the Sonoma County Department of Health Services (SCDHS).

Drilling Contractor: Cascade Drilling, Inc., of Rancho Cordova, CA, C-57 License #717510.

Drilling Method: Ozone sparge points were installed using 8-inch hollow-stem augers. A detailed summary of the sparge point installation procedures is provided in the Site-Specific Ozone Sparge Point Installation Procedures (Appendix B).

Number of Borings: Twelve soil borings were completed and converted to ozone sparge points SP-1 through SP-12 (Figure 2).

Well Depths: Ozone sparge points SP-1 through SP-12 were drilled and installed to total depths ranging from 16 to 25 feet below ground surface (bgs). The lowest historic depth-to groundwater recorded at the site was 11.30 feet bgs; therefore, the sparge point depths will allow for at least 4.7 feet of saturated zone.

Ozone Sparge Point Sampling and Analysis: Prior to the installation of the ozone sparge points, grab groundwater samples were collected from each boring. New disposable bailers were used to collect and transfer groundwater samples from each boring into the appropriate, laboratory-supplied, certified clean sample containers.

Analytical Sciences Laboratory (Analytical Sciences) of Petaluma, California (a California-certified laboratory) analyzed the groundwater samples for total petroleum hydrocarbons as gasoline (TPH-G), methyl-tert butyl ether (MTBE), and for benzene, toluene, ethyl benzene, and total xylenes (BTEX) by EPA Method 8015M/8260B.

Ozone Sparge Point Construction: The ozone sparge points are constructed using 0.5-inch stainless steel drop tubing attached to 3 feet of 1.0-inch diameter wire wrapped 0.020-slotted screen. The screen is surrounded by a #2/12 sand pack extending 1-foot above the screen interval with a 2-foot bentonite plug. The points are sealed with a cement/bentonite mixture from the bentonite plug to the ground surface. Sparge point heads are protected with an 18-inch heavy-duty steel cover and apron, flush-to-grade box to protect the system housing. The sparge points are fitted with a 0.5-inch diameter stainless steel tee, check valves, compression fittings and Teflon tubing that supplies ozone. The Teflon tubing is contained in 2-inch Schedule 40 PVC distribution conduits that are buried approximately 12 inches bgs. The completed sparge point construction details are shown on Figure 3.

Groundwater Sampling and Analysis: Grab groundwater samples were collected from each soil boring prior to the installation of the ozone sparge points for reconnaissance purposes. In addition, grab groundwater samples were collected weekly (June 14, 23, 30, and July 8, 2005) from monitoring wells MW-5 and MW-8 through MW-10 as required by the SCDHS. New disposable bailers were used to collect and transfer all groundwater samples from soil borings and monitoring wells into the appropriate laboratory-supplied, certified clean sample containers.

As required by the SCDHS, weekly grab groundwater samples collected from monitoring wells were analyzed for BTEX, acetone, and oxygenated fuel additives by EPA Method 8260B, for hexavalent chromium (Cr^{+6}) by EPA Method 7196A, for bromate (BrO_3^{-1}) and bromide (Br^{-1}) by EPA Method 300 (IC), and for molybdenum (Mo), selenium (Se), and vanadium (V) by EPA Method 6010/200.9.

Soil and Rinsate Water Disposal: Soil samples were collected from soil cuttings generated by the ozone sparge point activities and analyzed for appropriate parameters to meet soil disposal requirements. Rinsate water from the ozone sparge point installation activities and groundwater sampling events was collected and stored into 55-gallon DOT approved drums and later disposed by Clearwater Environmental. Copies of the waste manifests are provided in Appendix C.

Groundwater Monitoring and Sampling Results

The groundwater elevation data and dissolved oxygen concentrations collected during the June through July 2005 sampling events are summarized on Tables 1 and 2.

The analytical results of the grab groundwater samples collected from each of the boreholes drilled for the ozone sparge points are summarized in Table 3. Groundwater samples collected from within the excavation limits of the former underground storage tanks (Figure 2) contained the highest concentrations of petroleum-related constituents. Analytical results of groundwater samples collected from SP-12 did not quantify any petroleum-related constituents above the laboratory's reportable detection limits (RDLs).

Laboratory analytical results of grab groundwater samples collected during the June through July 2005 sampling events did not quantify any petroleum-related constituents above the laboratory's RDLs in monitoring wells MW-8 and MW-9. BTEX was quantified above the laboratory's RDLs in monitoring wells MW-5 and MW-10. Of the five oxygenated fuel additives, only tert-butyl alcohol (TBA) was detected in MW-5 at 37 µg/L and only during the June 14, 2005 sampling event. Oxygenated fuel additives and acetone were not detected (detection limits varied) in any of the groundwater samples collected from MW-10. In addition, the laboratory noted that 1,2-dichloroethane was detected in MW-5 at 1.4 µg/L during the July 8, 2005 sampling event. Bromide (Br^{-1}) was detected in all wells. Ozone oxidation/degradation by-product related constituents (such as BrO_3^{-1}) were not quantified above the laboratory's RDLs in any of the monitoring wells. Br^{-1} (a reduced form) is commonly found in groundwater, while BrO_3^{-1} is an oxidize form of Br that can be found in association with the ozonation process. Tables 4 and 5 summarize the analytical results.

The laboratory QA/QC included the use of method blanks to exclude false-positive analyses and the use of laboratory control samples to evaluate the percentage recovery of known analyte spikes. The recovery percentages for all of the sample analytes were within acceptable ranges. The complete laboratory reports, QA/QC data, and the chain-of-custody forms are included in Appendix D.

Site Geology and Hydrogeology

Boreholes for ozone sparge points SP-1 through SP-12 were logged and sampled from approximately 16 to 25 feet bgs to ensure proper screen placement of the sparge point. The sparge points were placed within the excavation limits of the former underground storage tanks and just outside the excavation limits to optimize remediation of the effected groundwater. Soils encountered during sparge point installation were consistent with previous soil borings and wells completed at the site. Copies of the boring logs are provided in Appendix E. In general, soils encountered consisted of stratified beds of silty sands to gravelly silts, sands, and gravels.

Ozone Sparge System Installation

From May 16 through 19, 2005, Winzler & Kelly conducted oversight responsibilities during the underground construction of the remedial system installation. Dunaway Enterprises, Inc. performed the site work including the construction of the system enclosure, trenching, and installation of the ozone system components. This work also included bringing in new electrical service to the property, installing the ozone unit and enclosure, trenching and backfilling from the enclosure to the individual sparge points (SP-1 through SP-12), and completing all sparge point connections.

On June 2 and 3, 2005, the remedial system manufacturer, Applied Process Technology, Inc. (APT), of Pleasant Hill, California, installed the ozone unit and completed the final system hook-up. Prior to start-up of the ozone system, APT field personnel performed a leak test on each sparge point supply line, valve, and connection using compressed air with a representative from the SCDHS observing. The field test consisted of pressurizing the ozone supply lines with 30 pounds square inch (psi) of air and then used a soap spray to check each sparge point for leaks. Any encountered leaks were repaired and the sparge points were rechecked. In addition, APT field personnel performed an initial test run of the ozone generator and ozone sparging. The system ran for three days injecting only air provided by the air compressor and re-checked for leaks prior to the generation and injection of ozone. The system passed the leak test prior to generation of any ozone.

Ozone System Start-Up

On June 7, 2005, the ozone system was started with a regulator from the SCDHS present. The ozone pressure and flow rate was initially set to operate at 18 psi and 0.25 standard cubic feet per minute (SCFM). These parameters are monitored by a pressure gauge and a rotameter which are both adjusted using the generator adjustment knob. The mass of ozone delivered to each well is the same regardless of the slight variation in permeability. The back pressure for each sparge point varies and is monitored by a pressure gauge. The backpressure of each sparge point was observed to range from 9 to 14 psi which is a result of line loss in the small delivery tubing and slight variations of the aquifer permeability properties. Over time the backpressure was observed to decrease in each of the sparge points. The ozone generator was initially set at approximately 0.7 amps, which produced 0.5 pounds of ozone per day (lbs O_3/day), representing an average mass of 0.063 lbs O_3/day per sparge point. The sparge points initially in operation are SP-1 through SP-6, SP-8, and SP-10. The ozone injection was programmed to run on an 80-minute cycle (10 minutes per sparge point and one sparge point at a time) followed by 5 minutes of compressed air delivered to each sparge point. The air injection operates concurrently but independently from the ozone generator and has its own set of pressure gauges and rotameter. Once the ozone delivery has been completed in a specific sparge point location and cycles to the next location, the compressed air is injection in the previous sparge point location for the programmed 5 minute duration, and advancing to the next location only after the ozone injection cycle has been completed. One of the pressure gauges on the air delivery line monitors the backpressure of each sparge point during air injection. The air flow rate was set at 1 SCFM and is intended to force ozone out into the formation. Also, the air injection will purge the residual ozone in the sparge point, which prevents the potential for ozone leakage to the sparge point wellheads.

On June 8, 2005, Winzler & Kelly performed the first operation and maintenance inspection after 24 hours of continuous run time. The ozone system was operating as designed and consequently the ozone generator rate was increased from 0.5 lbs O_3/day to 1.10 lbs O_3/day representing an ozone mass increase from 0.063 to 0.14 lbs O_3/day per sparge point. The ozone pressure and delivery flow rate was kept at 18 psi and 0.25 SCFM and the compressed air flow rate remained at 1 SCFM. The ozone system has been running continuously for 1,555.65 hours as of August 9, 2005.

Operation and maintenance inspections are scheduled for the 1st and 15th of each month. During these inspections, system parameters (includes ozone generator rate and flow rate) will be recorded. Ozone system updates will be reported in the semi-annual groundwater monitoring report.

Recommendations

Based on the baseline analytical results and the analytical results of the weekly groundwater monitoring and sampling events, Winzler & Kelly recommends monitoring and sampling for ozone related constituents on a quarterly basis. The ozone is not expected to begin significant oxidation of Br^{-1} until oxidation of petroleum hydrocarbons is subsequently completed. The manufacturer of the ozone injection system has indicated that oxidation of Br^{-1} is insignificant as long as oxidizable petroleum hydrocarbon concentrations are above 500 µg/L. The quarterly monitoring recommendation is based on the absence of Cr^{+6}, Mo, Se, and V in baseline groundwater samples and samples collected during the June through July 2005 sampling events. Winzler & Kelly recommends that monitoring wells MW-8 and MW-9 be analyzed quarterly for Br^{-1} and BrO_3^{-1}. Once total petroleum hydrocarbon concentrations drop below 500 µg/L in monitoring wells MW-5 and MW-10 sampling of these wells will be on a monthly basis for Br^{-1} and BrO_3^{-1}.

If you have any questions or comments regarding this project, please contact David J. Vossler, Project Manager, at (707) 523-1010.

Sincerely,
WINZLER & KELLY

Pon Xayasaeng
Environmental Engineer

PROFESSIONAL GEOLOGIST
KENT O'BRIEN
No. 2132
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Kent O'Brien, PG, CEG
Senior Project Geologist

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Attachments

Figures:

- Figure 1 – Location Map
- Figure 2 – Site Map
- Figure 3 – Ozone Sparge & Extraction Well Piping Plan
- Figure 4 – Typical Nested Ozone Sparge Point Construction Detail

Tables:

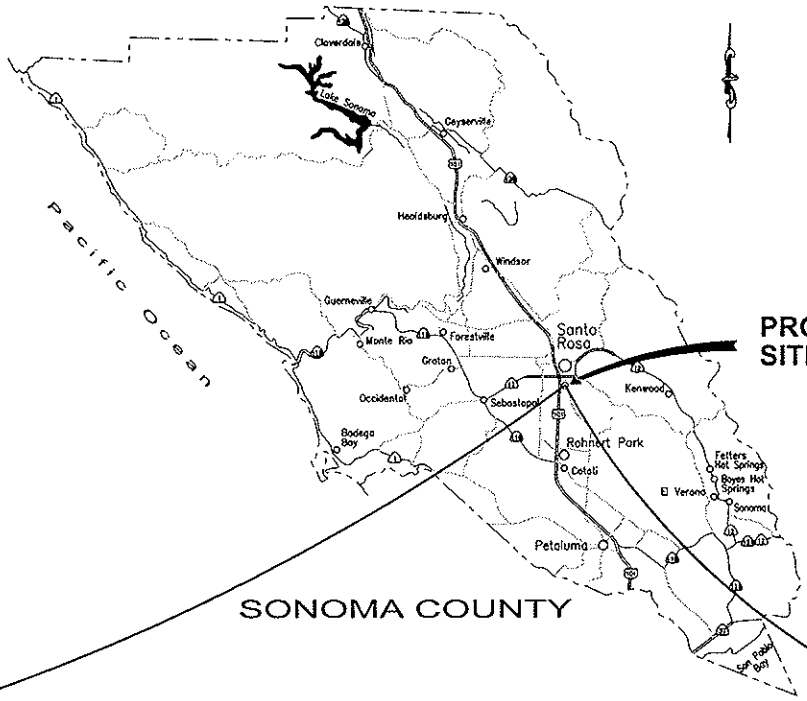
- Table 1 – Water Level Data
- Table 2 – Indicator Parameters
- Table 3 – Analytical Results of Ozone Sparge Point Grab Samples
- Table 4 – Analytical Results of Monitoring Well Samples
- Table 5 – Additional Analytical Results of Monitoring Well Samples

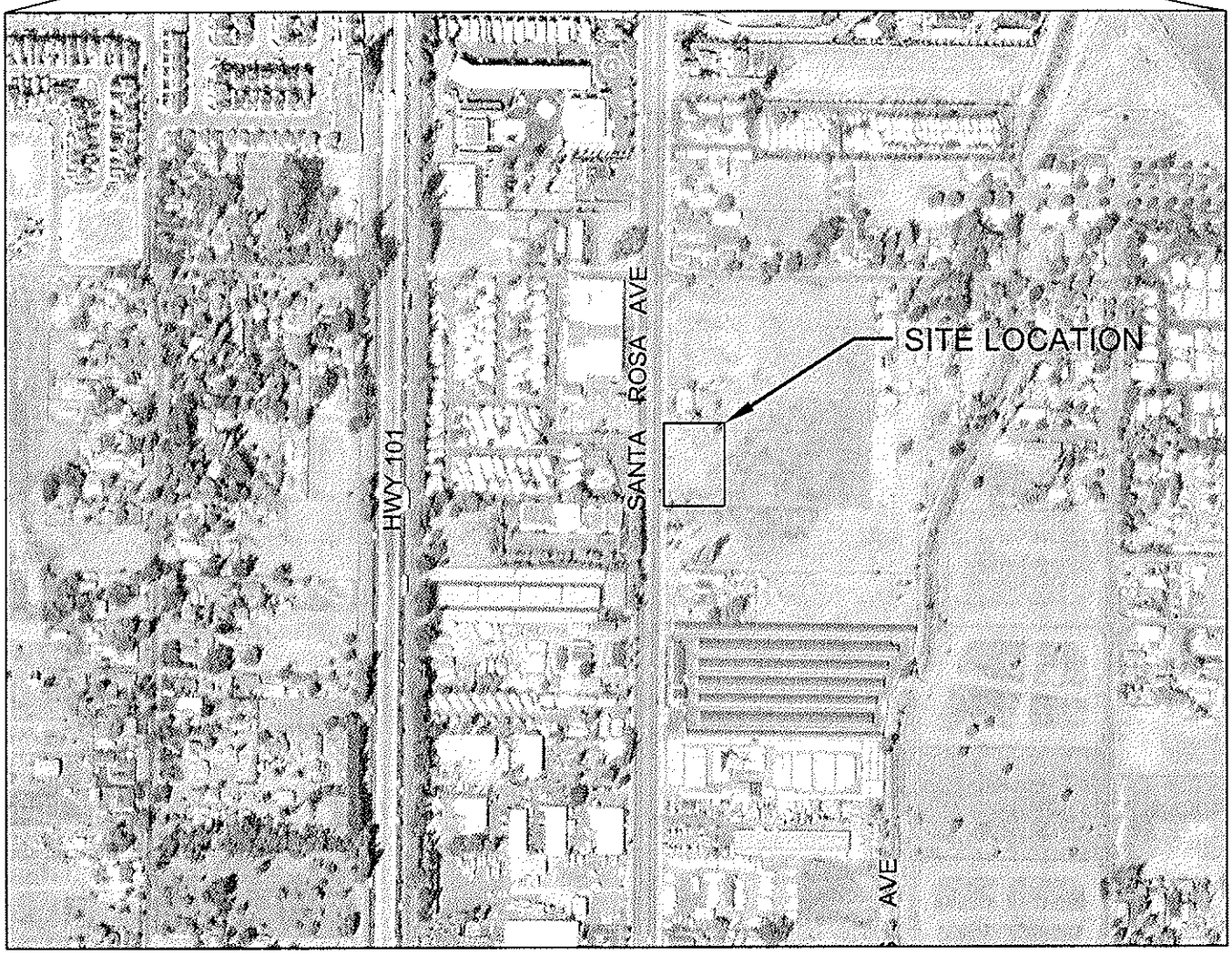
Appendices:

- Appendix A – Drilling Permit
- Appendix B – Site-Specific Ozone Sparge Point Installation Procedures
- Appendix C – Waste Manifests
- Appendix D – Analytical Laboratory Reports
- Appendix E – Boring Logs

c: Mr. Cliff Ives, Sonoma County Department of Health Services, Environmental Health Division, 475 Aviation Boulevard, Suite 220, Santa Rosa, California 95403

Figures





WIGGINS PROPERTY
3454 Santa Rosa Ave
Santa Rosa, California

LOCATION MAP
FIGURE 1

WINZLER & KELLY
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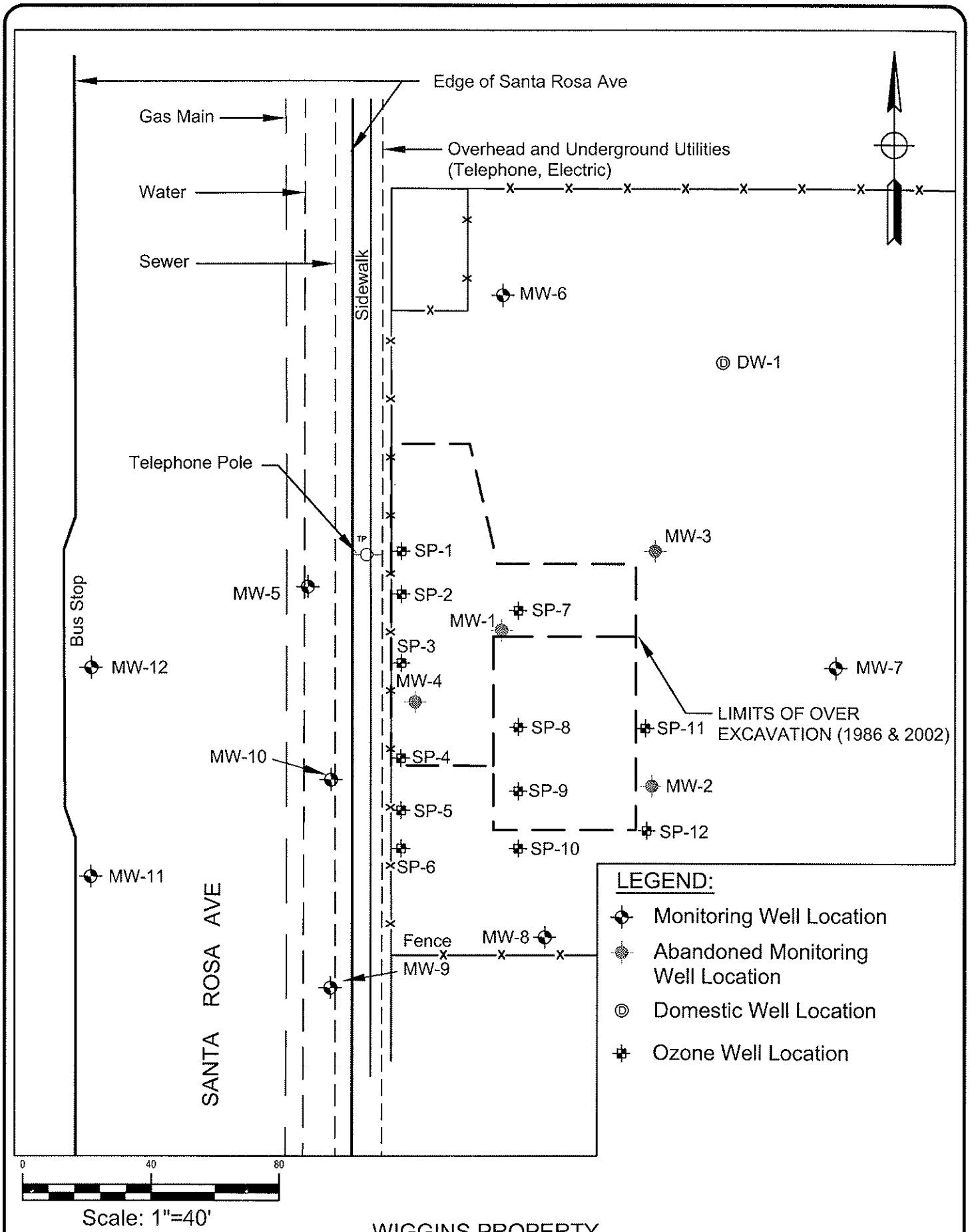

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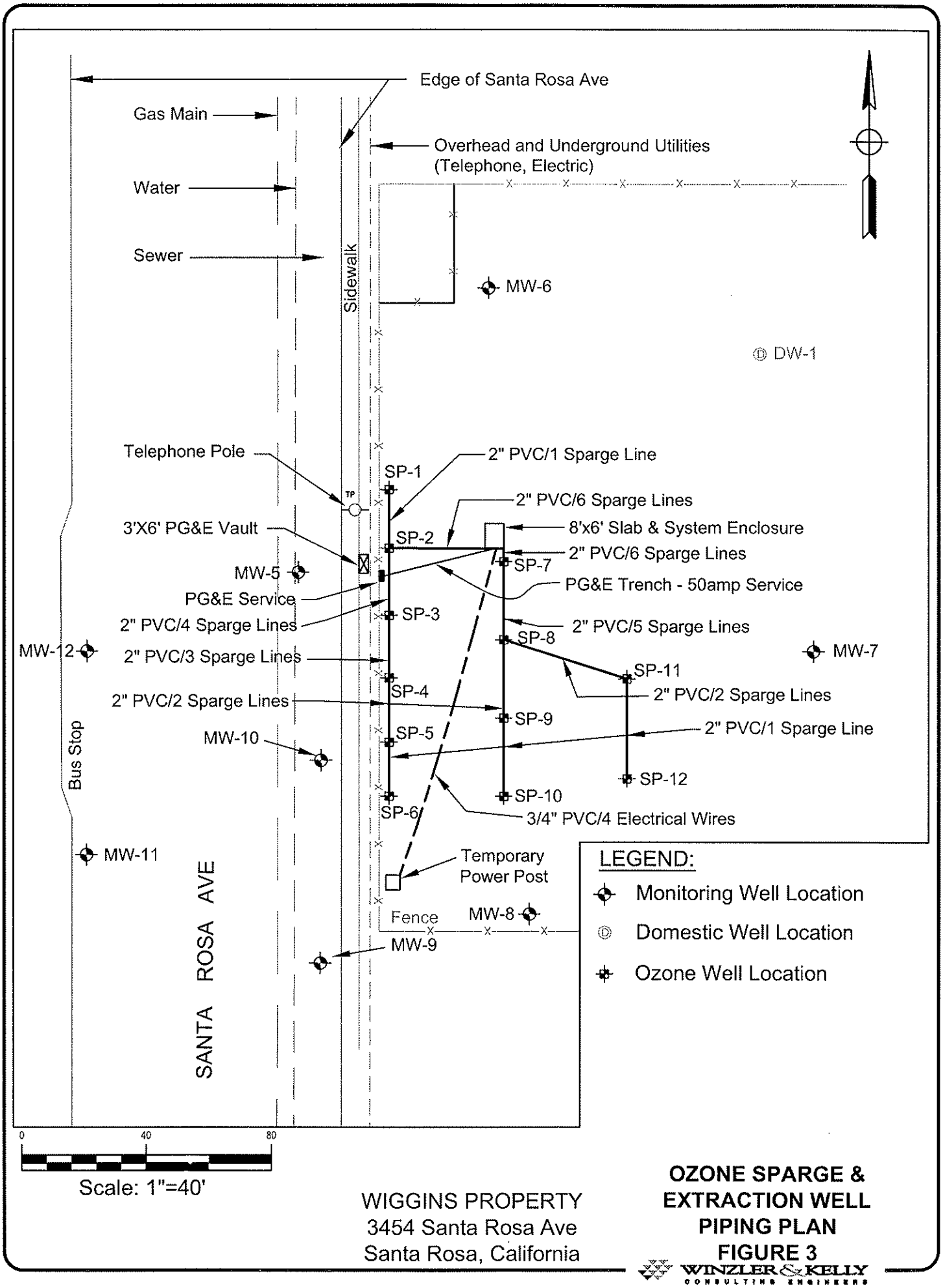
WIGGINS PROPERTY
3454 Santa Rosa Ave
Santa Rosa, California

SITE MAP
FIGURE 2

WINZLER & KELLY
CONSULTING ENGINEERS



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WIGGINS PROPERTY
3454 Santa Rosa Ave
Santa Rosa, California

OZONE SPARGE & EXTRACTION WELL PIPING PLAN
FIGURE 3

WINZLER & KELLY
CONSULTING ENGINEERS

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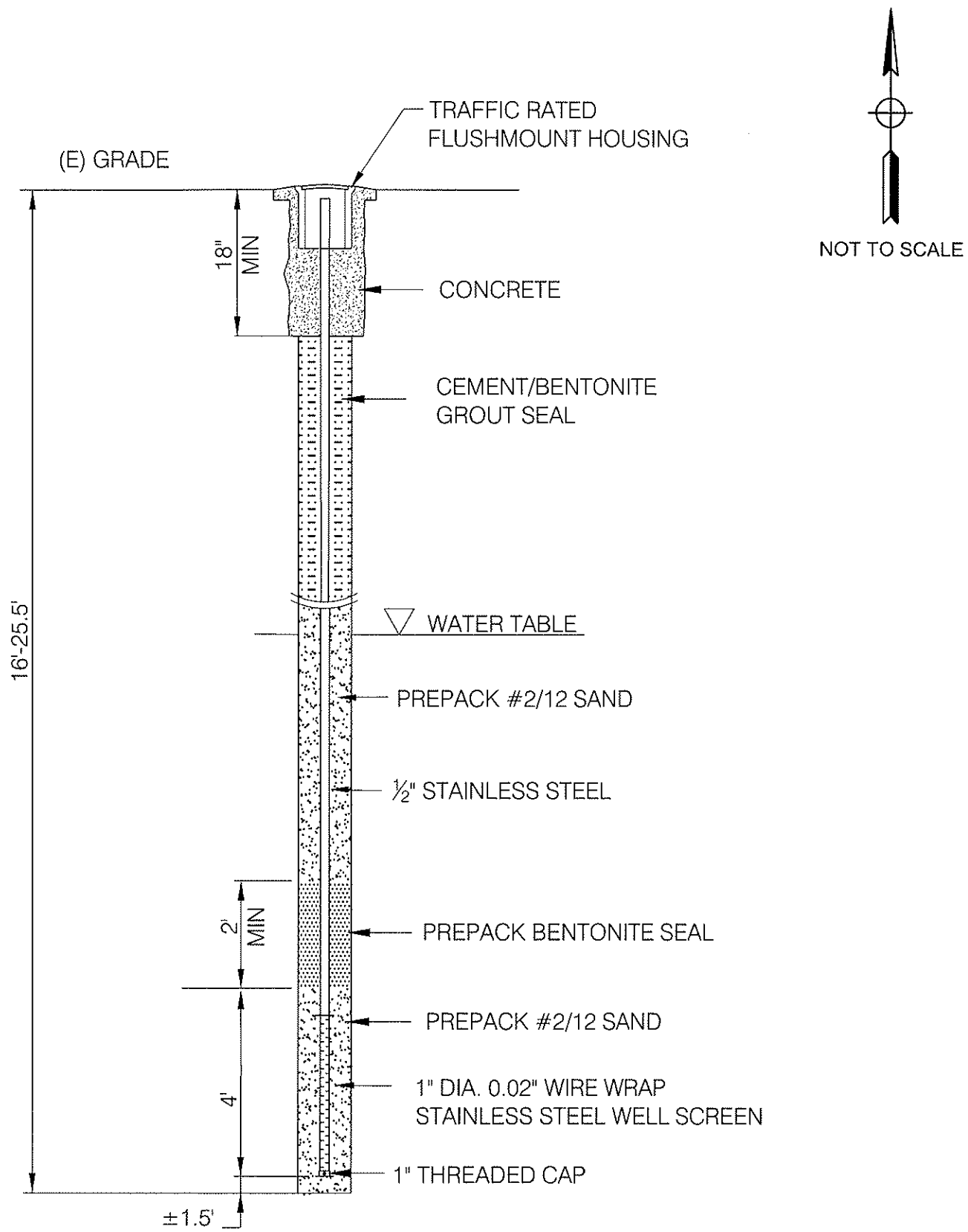

TYPICAL NESTED OZONE SPARGE POINT CONSTRUCTION DETAIL

WIGGINS PROPERTY
3454 SANTA ROSA AVE
SANTA ROSA, CA

FIGURE 4

WINZLER & KELLY
CONSULTING ENGINEERS

Tables

Table 1. Water Level Data

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date	Groundwater Elevation	Depth-to-Water	Top of Casing	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval
		MSL	feet bgs		feet			
MW-1 THROUGH MW-4 HAVE BEEN ABANDONED								
MW-5	04/29/04	99.64	6.25	105.89	---[a]	5'-20'	4'-21.5'	0'-4'
	07/29/04	96.64	9.25		---[a]			
	03/02/05	102.34	3.55		---[a]			
	05/12/05	101.88	4.01		---[a]			
	06/14/05	100.61	5.28		---[a]			
	06/23/05	100.10	5.79		---[a]			
	06/30/05	100.15	5.74		---[a]			
	07/08/05	99.52	6.37		---[a]			
	08/09/05	98.63	7.26		---[a]			
MW-6	04/29/04	100.72	5.76	106.48	---[a]	5'-20'	4'-21.5'	0'-4'
	07/29/04	97.57	8.91		---[a]			
	03/02/05	105.03	1.45		---[a]			
	05/12/05	103.27	3.21		---[a]			
	08/09/05	99.68	6.80		---[a]			
MW-7	04/29/04	100.55	5.73	106.28	---[a]	5'-20'	6'-21.0'	0'-4'
	07/29/04	97.05	9.23		---[a]			
	03/02/05	104.78	1.50		---[a]			
	05/12/05	103.61	2.67		---[a]			
	08/09/05	99.09	7.19		---[a]			
MW-8	04/29/04	99.81	6.53	106.34	---[a]	5'-20'	4'-21.0'	0'-4'
	07/29/04	96.56	9.78		---[a]			
	03/02/05	104.10	2.24		---[a]			
	05/12/05	102.78	3.56		---[a]			
	06/14/05	100.48	5.86		---[a]			
	06/23/05	100.49	5.85		---[a]			
	06/30/05	99.88	6.46		---[a]			
	07/08/05	99.63	6.71		---[a]			
	08/09/05	98.55	7.79		---[a]			
MW-9	04/29/04	99.67	6.07	105.74	---[a]	5'-20'	4'-20'	0'-4'
	07/29/04	96.57	9.17		---[a]			
	03/02/05	102.18	3.56		---[a]			
	05/12/05	101.69	4.05		---[a]			
	06/14/05	100.48	5.26		---[a]			
	06/23/05	100.28	5.46		---[a]			
	06/30/05	99.82	5.92		---[a]			
	07/08/05	99.52	6.22		---[a]			
	08/09/05	98.57	7.17		---[a]			
MW-10	8/15/2002*	94.56	11.30	105.86	---[a]	5'-20'	4'-20'	0'-4'
	11/26/2002*	95.16	10.70		---[a]			
	2/26/2003*	100.89	4.97		---[a]			
	5/20/2003*	98.40	7.46		---[a]			
	9/24/2003*	95.10	10.67		---[a]			
	04/29/04	---	---[b]		0.05			
	07/29/04	---	---[b]		0.15			
	03/02/05	---	---[b]		0.02			
	5/12/2005[c]	101.92	3.94		<0.02			
	6/14/2005[c]	100.55	5.31		<0.02			
	6/23/2005[c]	100.11	5.75		<0.02			
	6/30/2005[c]	99.81	6.05		<0.02			
	7/8/2005[c]	99.54	6.32		---[a]			
	8/9/2005[c]	98.55	7.31		---[a]			

Table 1. Water Level Data

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date	Groundwater Elevation	Depth-to-Water	Top of Casing	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval
		MSL	feet bgs		feet			
MW-11	04/29/04	99.59	6.11	105.70	---[a]	5'-20'	4'-20'	0'-4'
	07/29/04	96.60	9.10		---[a]			
	03/02/05	102.21	3.49		---[a]			
	05/12/05	101.76	3.94		---[a]			
	08/09/05	98.56	7.14		---[a]			
MW-12	04/29/04	99.57	6.26	105.83	---[a]	5'-20'	4'-20'	0'-4'
	07/29/04	96.59	9.24		---[a]			
	03/02/05	102.21	3.62		---[a]			
	05/12/05	101.78	4.05		---[a]			
	08/09/05	98.49	7.34		---[a]			

Abbreviations:

MSL = Mean Sea Level
bgs = Below Ground Surface
--- = Not Measured
* = Data by others, not verified by Winzler & Kelly
a = Free Product Not Present
b = Free Product Present
c = Depth-to-water measured using free product interface meter

Table 2. Indicator Parameters

Wiggins Property
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	pH	Temperature (^{0}F)	Conductivity (uS/cm)	ORP (mV)	DO (mg/L)
MW-1 THROUGH MW-4 HAVE BEEN ABANDONED						
MW-5	04/29/04	6.63	67.28	1317	-38	NM
	07/29/04	6.52	68.90	1265	-101	NM
	03/02/05	6.65	67.64	1416	-14	0.66
	05/12/05	6.65	66.20	1060	144	0.25
	06/14/05	NM	NM	NM	NM	0.86
	06/23/05	NM	NM	NM	NM	NM
	06/30/05	NM	NM	NM	NM	0.16
	07/08/05	NM	NM	NM	NM	0.55
	08/09/05	6.65	69.62	1336	-74	0.34
MW-6	04/29/04	6.42	67.82	778	180	NM
	07/29/04	--	--	--	--	NM
	03/02/05	--	--	--	--	0.70
	05/12/05	--	--	--	--	0.69
	08/09/05	--	--	--	--	0.31
MW-7	04/29/04	6.67	61.70	780	215	NM
	07/29/04	--	--	--	--	3.45
	05/12/05	--	--	--	--	1.37
	08/09/05	--	--	--	--	0.97
MW-8	04/29/04	6.36	59.72	332	-51	NM
	07/29/04	--	--	--	--	NM
	03/02/05	--	--	--	--	3.05
	05/12/05	6.52	59.36	345	-34	0.22
	06/14/05	NM	NM	NM	NM	2.15
	06/23/05	NM	NM	NM	NM	NM
	06/30/05	NM	NM	NM	NM	1.09
	07/08/05	NM	NM	NM	NM	1.36
	08/09/05	6.59	61.70	387	-76	0.57
MW-9	04/29/04	6.81	66.20	443	186	NM
	07/29/04	6.76	66.70	721	199	NM
	03/02/05	6.76	65.30	939	285	1.69
	05/12/05	6.63	68.00	1466	-53	2.41
	06/14/05	NM	NM	NM	NM	2.15
	06/23/05	NM	NM	NM	NM	NM
	06/30/05	NM	NM	NM	NM	0.27
	07/08/05	NM	NM	NM	NM	2.54
	08/09/05	7.07	68.36	704	82	1.01
MW-10	04/29/04	--	--	--	--	NM
	07/29/04	--	--	--	--	NM
	03/02/05	--	--	--	--	NM
	05/12/05	6.59	67.64	973	-82	NM
	06/14/05	NM	NM	NM	NM	14.32
	06/23/05	NM	NM	NM	NM	NM
	06/30/05	NM	NM	NM	NM	15.35
	07/08/05	NM	NM	NM	NM	13.17
	08/09/05	6.81	70.88	894	-42	17.20

Table 2. Indicator Parameters

Wiggins Property
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	pH	Temperature (^{o}F)	Conductivity (uS/cm)	ORP (mV)	DO (mg/L)
MW-11	04/29/04	6.84	67.46	867	155	NM
	07/29/04	6.74	67.46	759	194	NM
	03/02/05	6.81	67.46	862	233	0.34
	05/12/05	6.83	67.28	804	117	0.43
	08/09/05	7.03	68.54	790	50	0.52
MW-12	04/29/04	6.98	69.62	849	142	NM
	07/29/04	6.85	68.00	881	188	NM
	03/02/05	6.90	68.00	817	229	0.76
	05/12/05	6.95	67.46	772	106	0.35
	08/09/05	7.14	68.72	809	37	0.35

Abbreviations:

^{o}F = degrees Fahrenheit
uS/cm = microSiemens per centimeter
ORP = Oxidation Reduction Potential
mV = milliVolts
DO = Dissolved Oxygen
mg/L = milligrams per liter
NM = Not Measured
-- = Not Sampled

Table 3. Analytical Results of Ozone Sparge Point Grab Samples

Wiggins Property
3454 Santa Rosa Avenue, Santa Rosa, CA

Boring ID	Date Sampled	EPA 5030/8015M/8020					
		TPH-G	MTBE	B	T	E	X
		ug/L					
SP-1	05/05/05	**9,100**	<2.5	**310**	**140**	**420**	**1,400**
SP-2	05/05/05	**2,500**	<5.0	**16**	**1.4**	**92**	**120**
SP-3	05/05/05	**6,800**	<50	**310**	**12**	**310**	**250**
SP-4	05/05/05	**2,000** [a]	<2.5	**27**	**1.9**	**68**	**60**
SP-5	05/05/05	**2,100**	<2.5	**8.1**	**1.6**	**86**	**84**
SP-6	05/05/05	**12,000**	<2.5	**66**	**75**	**670**	**520**
SP-7	05/04/05	**17,000**	<20	**240**	**130**	**1,000**	**2,000**
SP-8	05/03/05	**18,000**	---	**18**	**9.3**	**40**	**20**
SP-9	05/03/05	**40,000**	---	**30**	<20	<20	**43**
SP-10	05/03/05	**7,000**	---	**110**	**6.4**	**200**	**46**
SP-11	05/03/05	**3,300**	---	**58**	**6.6**	**3.7**	**10**
SP-12	05/03/05	<50	---	<0.5	<0.5	<0.5	<1.5

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
MTBE = Methyl tert-butyl ether
B = Benzene
T = Toluene
E = Ethyl benzene
X = Total xylenes
ug/L = Micrograms per liter

Notes:

a = BTEX confirmed present and MTBE confirmed absent by GC/MS (EPA 8260).
--- = Not analyzed due to lab error
<50 = Analyte not detected at indicated detection limit.

Table 4. Analytical Results of Monitoring Wells Samples

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	TPH-G	TPH-D	TPH-MO	B	T	E	X	TBA	MTBE	DIPE	ETBE	TAME
		ug/L											
MW-5	04/29/04	**870**	**57** [a]	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/29/04	**1,100**	**95** [a]	<200	**4.8**	<1.0	**3.7**	**1.6**	<25	<1.0	<1.0	<1.0	<1.0
	03/02/05	**750**	<50	<200	**8.3**	**1.7**	**6.6**	**26**	**46**	<1.0	<1.0	<1.0	<1.0
	05/12/05	**320**	**54**	<200	<1.0 [b]	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/14/05	---	---	---	<1.0	<1.0	**1.0**	**2.1**	**37**	<1.0	<1.0	<1.0	<1.0
	06/23/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/30/05	---	---	---	**5.3**	**1.3**	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/08/05	---	---	---	**15** [c]	**1.2**	**2.0**	<1.0	<25	<1.0	<1.0	<1.0	<1.0
MW-6	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/29/04	Not required to sample											
MW-7	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/29/04	Not required to sample											
MW-8	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/29/04	---	---	---	---	---	---	---	---	---	---	---	---
	03/02/05	---	---	---	---	---	---	---	---	---	---	---	---
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/14/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/23/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/30/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/08/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
MW-9	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	03/02/05	<50	<50	<200	<1.0	**5.5**	**2.0**	**9.8**	<25	<1.0	<1.0	<1.0	<1.0
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/14/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/23/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	06/30/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/08/05	---	---	---	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
MW-10	04/29/04	Approximately 0.05 feet of free product present											
	07/29/04	Approximately 0.15 feet of free product present											
	03/02/05	Approximately 0.02 feet of free product present											
	05/12/05	**8,800**	**8,000** [d]	<200	**55**	**17**	**310**	**426**	<250	<10	<10	<10	<10
	06/14/05	---	---	---	**170**	**50**	**450**	**845**	<250	<10	<10	<10	<10
	06/23/05	---	---	---	**160**	**48**	**360**	**756**	<25	<10	<10	<10	<10
	06/30/05	---	---	---	**140**	**42**	**270**	**527**	<500	<20	<20	<20	<20
	07/08/05	---	---	---	**220**	**81**	**460**	**957**	<125	<5.0	<5.0	<5.0	<5.0
MW-11	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	03/02/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
MW-12	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	03/02/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diese
TPH-MO = Total petroleum hydrocarbons as motor oi
B = Benzene
T = Toluene
E = Ethyl benzene
X = Total xylenes
TBA = Tert-butyl alcohol
MTBE = Methyl tert-butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TAME = Tert-amyl methyl ether
ug/L = Micrograms per liter

Notes:

<1.0 = Analyte not detected at indicated detection limit
a = The chromatogram does not exhibit a chromatographic pattern characteristic of diesel. Higher boiling point constituents of weathered gasoline are present
b = The following additional compound was detected: 1,2-dichloroethane (1.0 ug/L
c = The following additional compound was detected: 1,2-dichloroethane (1.4 ug/L
d = The sample chromatogram exhibits a pattern that suggests both weathered gasoline and diesel are simultaneously present.

Table 5. Additional Analytical Results of Monitoring Well Samples

Wiggins Property
3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	Acetone	Hexavalent Chromium (CR^{+6})	Bromate (BrO_3^{-1})	Bromide (Br^{-1})	Molybdenum (Mo)	Selenium (Se)	Vanadium (V)
		ug/L	mg/L					
MW-5	05/12/05	<1.0	<0.005 [a]	<0.015 [b]	**0.32**	<0.05	<0.005	<0.05
	06/14/05	<1.0	<0.005 [a]	<0.015 [b]	**0.37**	<0.05	<0.005	<0.05
	06/23/05	<1.0	<0.005 [a]	<0.015 [b]	**0.39**	<0.05	<0.005	<0.05
	06/30/05	<1.0	<0.005 [a]	<0.015 [b]	**0.41**	<0.05	<0.005	<0.05
	07/08/05	<1.0	<0.005 [a]	<0.015 [b]	**0.41**	<0.020	<0.005	<0.020
MW-8	05/12/05	<1.0	<0.005 [a]	<0.015 [b]	**0.14**	<0.05	<0.005	<0.05
	06/14/05	<1.0	<0.005 [a]	<0.010	**0.094**	<0.05	<0.005	<0.05
	06/23/05	<1.0	<0.005 [a]	<0.015 [b]	**0.072**	<0.05	<0.005	<0.05
	06/30/05	<1.0	<0.005 [a]	<0.010	**0.074**	<0.05	<0.005	<0.05
	07/08/05	<1.0	<0.005 [a]	<0.010	**0.074**	<0.020	<0.005	<0.020
MW-9	05/12/05	<1.0	<0.005 [a]	<0.015 [b]	**0.30**	<0.05	<0.005	<0.05
	06/14/05	<1.0	<0.005 [a]	<0.015 [b]	**0.26**	<0.05	<0.005	<0.05
	06/23/05	<1.0	<0.005 [a]	<0.015 [b]	**0.18**	<0.05	<0.005	<0.05
	06/30/05	<1.0	<0.005 [a]	<0.015 [b]	**0.42**	<0.05	<0.005	<0.05
	07/08/05	<1.0	<0.005 [a]	<0.015 [b]	**0.12**	<0.020	<0.005	<0.020
MW-10	05/12/05	<10	<0.005 [a]	<0.015 [b]	**0.41**	<0.05	<0.005	<0.05
	06/14/05	<10	<0.005 [a]	<0.015 [b]	**0.41**	<0.05	<0.005	<0.05
	06/23/05	<1.0	<0.005 [a]	<0.015 [b]	**0.38**	<0.05	<0.005	<0.05
	06/30/05	<1.0	<0.005 [a]	<0.015 [b]	**0.38**	<0.05	<0.005	<0.05
	07/08/05	<5.0	<0.005 [a]	<0.015 [b]	**0.38**	<0.020	<0.005	<0.020
MW-11	05/12/05	<1.0	<0.005 [a]	<0.015 [b]	**0.25**	<0.05	<0.005	<0.05
MW-12	05/12/05	<1.0	<0.005 [a]	<0.015 [b]	**0.24**	<0.05	<0.005	<0.05

Abbreviations:

ug/L = Micrograms per liter
mg/L = Milligrams per liter

Notes:

<1.0 = Analyte not detected at indicated detection limit.

a = The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman graphite furnace (EPA 200.9) resulted in no detection of chromium at a detection limit below 0.005 mg/L. Hexavalent chromium is not present at a level above 0.005 mg/L.

b = The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.

--- = Not analyzed

Appendix A
Drilling Permit

CI

COUNTY OF SONOMA — DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
475 Aviation Blvd., Suite 220, Santa Rosa, CA 95403
Phone (707) 565-6565 Fax (707) 565-6525 www.sonoma-county.org

DEPT. OF HEALTH SVCS
APR 11 2005
ENVIRONMENTAL HEALTH DIVISION

APPLICATION FOR DRILLING PERMIT
for Regional Board Lead/Environmental Assessment (LOP Lead)

For Office Use Only
Amount paid 294.00
Receipt number 32338
Payment date 4-12-05 Rev. code 1343
Site ID# 1849
Permit # 4651

Well type: [ ] Monitoring well [ ] Recovery extraction well [ ] Boring [ ] Injection well [ ] Destruct [ ] Environmental assessment
[ ] Soil gas survey [ ] Direct push [X] Air sparging/venting [ ] Remediation well [X] Other Ozone Sparging

Well depth 25ft+ Boring depth 25ft+

On-site well/boring 12 ID # SP-1 thru SP-12 # Off-site well/boring Ø ID # Ø

Submit legal right-of-entry/off-site well address/encroachment permit

On-site Address 3454 Santa Rosa Avenue APN# 134-132-017

Facility Name Wiggins Property

On-site Owner Wiggins Enterprises Phone 707-545-7869

Street 1370 Airport Boulevard City Santa Rosa State CA Zip 95403

Responsible Party Wiggins Enterprises Phone 707-545-7869

Street 1370 Airport Boulevard City Santa Rosa State CA Zip 95403

Consultant Winzler & Kelly Consulting Engineers Phone 707-523-1010

Street 495 Tesconi Circle City Santa Rosa State CA Zip 95401

License #/Type

Drilling Contractor Cascade Drilling, Inc. Phone (916) 638-1169

Street 3632 Omec Circle City Rancho Cordova State CA Zip 95742

C-57 License # 717510

Type of work: [ ] Initial Investigation # Wells [X] Subsequent Investigation (Remediation) 12 # Wells [ ] Destruct # Wells

Groundwater investigation due to: [X] Underground tank [ ] Surface Impoundment [ ] Environmental assessment
[ ] Surface disposal practice—specify involved industry
[ ] Other

Perforated intervals 22ft – 25ft. 0.02 Chemical constituents TPH-gas, BTEX

Disposal method for soil cuttings Bin/offhaul loadAll Disposal method for development water Drums/offhaul

Drilling method HSA Method of drill equip. rinsate containment Drums/offhaul

If destroying a well, abandonment method

Submit plot plan of wells in relation to all sewer or septic lines. N/A C.I.

Is well to be constructed within: 100 feet of a septic tank or leachfield? [ ] Yes [X] No
50 feet of any sanitary sewer line? [X] Yes [ ] No
25 feet of any private sanitary sewer line? [ ] Yes [X] No

In addition, all monitoring wells must include ***identification system*** affixed to interior surface:

1) Well identification 2) Well type 3) Well depth 4) Well casing diameter 5) Perforated intervals

Well identification number and well type shall be ***affixed*** to the ***exterior surface*** security structure.

04/12/05

001343D
WELL PER 294.00
TTLAMT 294.00
CHECKS 294.00
CHANGE 0.00
32338 #2 10:55

DEPT. OF HEALTH SVCS

APR 1 1 2005

ENVIRONMENTAL HEALTH DIVISION

For Office Use Only

Address 3454 Santa Rosa

Site ID# 1849

Permit # 4651

I hereby agree to comply with all laws and regulations of the County of Sonoma and State of California pertaining to water well construction. I will telephone (707) 565-6565, 48 hours in advance, to notify the Environmental Health Specialist when completing or destroying a well. I will furnish the Director of Health Services and the owner a legible copy of the State Water Well Driller's Report within 15 days; and a copy of the Summary Report, including sample results, should be received by this Department within 90 days in order to obtain final approval on this well permit. I acknowledge that the application will become a permit ***only*** after site approval and payment of fee. I understand that this permit is not transferable and expires one year from date of issuance.

Signature of Well Driller—***no proxies*** Date 4-7-05

Insurance Carrier Alaska National Expiration Date 5-1-05

Once all wells/borings are installed, submit a Well Driller's Log and/or Summary Report to complete permit process.

Indicate on attached plot plan the exact location of well(s) with respect to the following items: property lines, water bodies or water courses drainage pattern, roads, existing wells, sewer main and laterals and private sewage disposal systems or other sources of contamination or pollution. INCLUDE DIMENSIONS. The validity of this permit depends upon the accuracy of the information provided by the applicant.

Conditions of permit:

FOR OFFICE USE ONLY – ENVIRONMENTAL HEALTH DIVISION

Permit approved by _____ Date 4/29/05

Constr. approved by _____ Observed? [ ] Yes [ ] No Well # _____ Date ___/___/___

RWQCB / LOP approval _____ Date ___/___/___

Appendix B
Site-Specific Ozone Sparge Point Installation Procedures

WINZLER & KELLY CONSULTING ENGINEERS

Site-Specific Ozone Sparge Point Installation Procedures
Wiggins Property
3454 Santa Rosa Avenue, Santa Rosa, California

1. Objective

Install 12 ozone sparge points.

2. Background

Ozone sparge points will be installed in accordance with the procedures described herein.

3. Personnel Required and Responsibilities

Staff Geologist: An experienced staff geologist (SG) under the direction of a California Professional Geologist (PG) or Engineer (PE) will ensure that the ozone sparge points will be properly installed and oversee the logging of the borings. The SG will be responsible for complying with the procedures regarding installation of the ozone sparge points and documentation.

Drilling Technicians: Drilling technicians from a drilling company holding a C-57 license will perform the ozone sparge point installation.

4. Equipment Required

- Rotary auger drilling rig
- Level C and D safety equipment
- Boring Log Form / Munsell Soil Color Charts
- Laboratory provided sample containers
- Sample labels / Indelible marker
- Disposal gloves
- Ice chest with ice
- ASTM Classification Guide
- Wash equipment
- Organic Vapor meter (OVM)

5. Procedure

- Winzler & Kelly obtain all required permits prior to installing the ozone sparge points. A Site-Specific Safety Plan detailing site hazards, site safety, and control was prepared prior to any field work. Underground Services Alert (USA) was notified of the planned work at least 48 hours prior to drilling.

- An OVM will be used during the drilling and sampling activities to screen for the presence of Volatile Organic Compounds (VOCs).

- A HSA drilling rig equipped with 8-inch diameter augers will be used to install the ozone sparge points. After the desired depth has been reached the ozone sparge point is constructed by lowering a 1/2-inch diameter stainless steel riser pipe with 3 feet of 1-inch 0.020 slotted stainless steel well screen threaded at the bottom through the HSAs. The attached sparge assembly is lowered through the HSA annulus to the bottom of the boring. A sand filter pack is installed from the total depth to approximately one foot above the ozone screen. A two-foot thick bentonite seal is then installed above the ozone sand filter pack and neat cement and bentonite slurry is then installed in the annulus to form a well seal.

- The ozone sparge point borings were installed at varying depths base on the lithology. Soil samples were collected for lithologic descriptions only by driving an 18-inch long, split-spoon sampler at specified intervals**.**

- Soil types were classified and logged using the ASTM Visual Manual Procedure (D 2488-93) and Munsell Soil Color Charts.

- The lithology, moisture, density, color, sample identification, OVM measurements, and well construction details were recorded on the boring logs as appropriate.

- All ozone sparge points were constructed using 1/2-inch diameter stainless steel tubing and 3 feet of 1-inch diameter 0.020-slotted stainless steel well screen. A threaded cap was attached to the bottom of the casing. Ozone sparge point construction details will be documented on the boring log.

- A sand pack of #2/12 washed sand was used for the slotted well screen. Sand was poured through the HSAs as the augers were removed from the boring.

- A seal of bentonite clay was extended a minimum of 2 feet above the ozone sand pack. A cement/bentonite slurry, not exceeding 5 percent bentonite, was placed by tremie pipe to 1.5 feet below the ground surface. The top of the stainless steel casing was approximately 2 inches below grade.

- A duct tape was placed over the top of the casing during well completion to prevent debris from entering the wells.

- The wells were protected by 18-inch flush-mounted traffic boxes set in concrete. The tops of the traffic boxes were set above grade with a gently sloping concrete rim.

- Upon completion of the ozone sparge point installations, each point was secured by bolting down the lid of the flush-mounted traffic box.

Appendix C
Waste Manifests

A 5408

West Contra Costa Sanitary Landfill, Inc.

Office (510) 231-4156 Landfill (510) 233-4330
Foot of Parr Boulevard, Richmond, CA 94801

TICKET: 772237
DATE: 05/19/2005
TIME: 15:25 - 16:00

CUSTOMER:
TRAILER: 9997 / Credit Card Customer ROUTE:
ORIGIN GROUP: NA / Non App
TRUCK: 54 / Santa Ro LICENSE:
TRUCK TYPE: F1 CP31277
COMMENT: NA / Non App ORIG: NA / Non App

GROSS:
TARE: 44500 LBS
NET: 27580 LBS
WO: 16920 LBS

WINZLER & KELLY HAUL CASE

WASTE	QUANTITY	UNIT	RATE	AMOUNT
CD / Construction Demo - Tons	8.46	T	$ 34.75	$ 293.99
Mandatory Fees		T	$ 2.	Total: $ 23.27

CASH IN: $ 317.26 CHANGE: $ 0.00 317.26

Driver: [signature] Attendant: CARD#: 8939

Maria Avalos

I certify that I have not disposed of any liquid or hazardous waste.

WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighted, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions code, administered by the division of Measurement Standards of the California Department of Food and Agriculture.

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	2. Page 1 of 1	3. Document Number NH- 80319

4. Generator's Name and Mailing Address

[illegible]
1370 AIRPORT BLVD
SANTA ROSA CA 95403

Generator's Phone

COPY

5. Transporter Company Name	US EPA ID Number	7. Transporter Phone
CLEARWATER ENVIRONMENTAL	CAR000007013	510 476-1740

8. Designated Facility Name and Site Address	US EPA ID Number	10. Facility's Phone
ALVISO INDEPENDENT OIL 5002 ARCHER STREET ALVISO CA 95002	CAL000161743	510 476-1740

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. PURGE WATER, NON ~~[illegible]~~ HAZARDOUS WASTE LIQUID	001	DM	0110	G
b.				

15. Special Handling Instructions and Additional Information

11a ,

WEAR PPE 24 HOUR EMERGENCY KIRK HAYWARD 510 476 1740 SITE WIGGINS PROPERTY 3454 SANTA ROSA AVE SANTA ROSA, CA 95407 (WINZLER & KELLY)

06-22-05-008-009

Handling Codes for Wastes Listed Above 11a.	11b.

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to state or federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[signature]	06	22	05

17. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
DAVID MORRISON	[signature] David Morrison	06	22	05

18. Discrepancy Indication Space

19. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 18.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR / TRANSPORTER / FACILITY

WHITE – ORIGINAL (Return to Generator) YELLOW – TSDF (Retain Copy) PINK – TRANSPORTER COPY GOLDENROD – GENERATOR'S COPY

Appendix D
Analytical Laboratory Reports

Analytical Sciences

Report Date: May 12, 2005

Pon Xayasaeng
Winzler & Kelly Consulting Engineers
495 Tesconi Circle, Suite 9
Santa Rosa, CA 95401-4696

LABORATORY REPORT

Project Name: **Wiggins Property** **0259805001.32002**

Lab Project Number: **5050405**

This 4 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director

PO Box 750336
Petaluma, CA 94975-0336
Telephone: (707) 769-3128

110 Liberty Street
Petaluma, CA 94952
Fax: (707) 769-8093

TPH Gasoline & BTEX in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29606	SP-12	TPH/Gasoline	ND	50
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 05/03/05 Date Analyzed: 05/06/05 QC Batch #: 5504
Date Received: 05/04/05 Method: EPA 5030/8015M/8020

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29607	SP-11	TPH/Gasoline	3,300	50
		Benzene	58	0.5
		Toluene	6.6	0.5
		Ethyl Benzene	3.7	0.5
		Xylenes	10	1.5

Date Sampled: 05/03/05 Date Analyzed: 05/06/05 QC Batch #: 5504
Date Received: 05/04/05 Method: EPA 5030/8015M/8020

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29608	SP-10	TPH/Gasoline	7,000	500
		Benzene	110	5.0
		Toluene	6.4	5.0
		Ethyl Benzene	200	5.0
		Xylenes	46	15

Date Sampled: 05/03/05 Date Analyzed: 05/06/05 QC Batch #: 5504
Date Received: 05/04/05 Method: EPA 5030/8015M/8020

Lab Project #: 5050405 CA Lab Accreditation #: 2303

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29609	**SP-9**	**TPH/Gasoline**	**40,000**	2,500
		Benzene	**30**	20
		Toluene	**ND**	20
		Ethyl Benzene	**ND**	20
		Xylenes	**43**	60

Date Sampled: 05/03/05 Date Analyzed: 05/06/05, 05/10/05 QC Batch #: 5504
Date Received: 05/04/05 Method: EPA 5030/8015M/8020

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29610	**SP-8**	**TPH/Gasoline**	**18,000**	500
		Benzene	**18**	5.0
		Toluene	**9.3**	5.0
		Ethyl Benzene	**40**	5.0
		Xylenes	**20**	15

Date Sampled: 05/03/05 Date Analyzed: 05/06/05 QC Batch #: 5504
Date Received: 05/04/05 Method: EPA 5030/8015M/8020

LABORATORY
QUALITY ASSURANCE REPORT

QC Batch #: 5504 **Lab Project #:** 5050405

Sample ID	Compound	Result (ug/L)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
29537	CMS	TPH/Gas		NS	
	CMS	Benzene	9.49	10.0	94.9
	CMS	Toluene	9.62	10.0	96.2
	CMS	Ethyl Benzene	9.32	10.0	93.2
	CMS	Xylenes	28.4	30.0	94.6

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
29537	CMSD	TPH/Gas		NS		
	CMSD	Benzene	9.45	10.0	94.5	0.43
	CMSD	Toluene	9.51	10.0	95.1	1.1
	CMSD	Ethyl Benzene	9.32	10.0	93.2	0.03
	CMSD	Xylenes	28.4	30.0	94.6	0.03

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

Analytical Sciences

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CHAIN OF CUSTODY

LAB PROJECT NUMBER: 5050405
WINZLER & KELLY PROJECT NAME: Wiggins Property
WINZLER & KELLY PROJECT NUMBER: 0259805001.32002

GEOTRACKER EDF: X Y ___ N
GLOBAL ID: T0e09700531

COOLER TEMPERATURE
Blue Ice °C

COC
PAGE 1 OF 1

CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS
ADDRESS: 495 TESCONI CIRCLE, SUITE 9
SANTA ROSA, CA 95401-4696
CONTACT: Results: Sonya; Questions: Pon
PHONE#: (707) 523-1010
FAX #: (707) 527-8679

TURNAROUND TIME (check one)

MOBILE LAB ___
SAME DAY ___
48 HOURS ___
5 DAYS ___
24 HOURS ___
72 HOURS ___
NORMAL X

ANALYSIS

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX ~~+ MTBE~~ EPA 8015M/8020	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES + PB SCAVENGERS EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141/ 8082	CAM 17 METALS / 5 LUFT METALS	TOTAL LEAD			COMMENTS	LAB SAMPLE #
1	SP-12	5/3/05	9:22	W	4	Yes	X													Please provide Chromatograms	29606
2	SP-11	↓	11:13	↓	↓	↓	↓													↓	29607
3	SP-10		12:34																		29608
4	SP-9		14:49																		29609
5	SP-8		16:20																		29610
6																					
7																					
8																					
9																					
10																					
11																					

SIGNATURES

SAMPLED BY: Pon Jayasaeng

RELINQUISHED BY: [signature] 5/3/05 17:51
SIGNATURE DATE TIME

Corrina Salvadori 5/4/05 11:08am

RECEIVED BY LABORATORY: [signature]
SIGNATURE

5/4/05 11:09
DATE TIME

Analytical Sciences

Report Date: June 8, 2005

Pon Xayasaeng
Winzler & Kelly Consulting Engineers
495 Tesconi Circle, Suite 9
Santa Rosa, CA 95401-4696

LABORATORY REPORT

Project Name: **Wiggins Property** **0259805001.3200**

Lab Project Number: **5051206**

This 24 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director

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TPH Gasoline in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29782	**DW-3521**	**TPH/Gasoline**	**ND**	50
29783	**DW-3415**	**TPH/Gasoline**	**ND**	50
29784	**DW-3450**	**TPH/Gasoline**	**ND**	50
29785	**MW-8**	**TPH/Gasoline**	**ND**	50
29786	**MW-12**	**TPH/Gasoline**	**ND**	50
29787	**MW-11**	**TPH/Gasoline**	**ND**	50
29788	**MW-9**	**TPH/Gasoline**	**ND**	50
29789	**MW-5**	**TPH/Gasoline**	**320**	50
29790	**MW-10**	**TPH/Gasoline**	**8,800**	500

Date Sampled: 05/12/05
Date Received: 05/12/05
Date Analyzed: 05/13/05
Method: EPA 5030/8015M
QC Batch #: 5535

TPH Diesel & Motor Oil in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29785	MW-8	TPH/Diesel	ND	50
		Motor Oil	ND	200

Date Sampled:	05/12/05	Date Extracted:	05/13/05	QC Batch #:	5534
Date Received:	05/12/05	Date Analyzed:	05/13/05	Method:	EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29786	MW-12	TPH/Diesel	ND	50
		Motor Oil	ND	200

Date Sampled:	05/12/05	Date Extracted:	05/13/05	QC Batch #:	5534
Date Received:	05/12/05	Date Analyzed:	05/13/05	Method:	EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29787	MW-11	TPH/Diesel	ND	50
		Motor Oil	ND	200

Date Sampled:	05/12/05	Date Extracted:	05/13/05	QC Batch #:	5534
Date Received:	05/12/05	Date Analyzed:	05/13/05	Method:	EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29788	MW-9	TPH/Diesel	ND	50
		Motor Oil	ND	200

Date Sampled:	05/12/05	Date Extracted:	05/13/05	QC Batch #:	5534
Date Received:	05/12/05	Date Analyzed:	05/13/05	Method:	EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29789	**MW-5**	**TPH/Diesel**	**54**	50
		Motor Oil	**ND**	200

Date Sampled:	05/12/05	Date Extracted:	05/13/05	QC Batch #:	5534
Date Received:	05/12/05	Date Analyzed:	05/13/05	Method:	EPA 3510/8015M

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29790	**MW-10**	**TPH/Diesel**	**8,000** (1)	50
		Motor Oil	**ND**	200

Date Sampled:	05/12/05	Date Extracted:	05/13/05	QC Batch #:	5534
Date Received:	05/12/05	Date Analyzed:	05/13/05	Method:	EPA 3510/8015M

(1) The sample chromatogram exhibits a pattern that suggests both weathered gasoline and diesel are simultaneously present.

Volatile Hydrocarbons by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29782	**DW-3521**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.9	105	70 – 130
toluene-d_8 (20)	20.0	100	70 – 130
4-bromofluorobenzene (20)	19.5	97.5	70 – 130

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5533
Date Received:	05/12/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29783	**DW-3415**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.8	104	70 – 130
toluene-d_8 (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	19.6	98.0	70 – 130

Date Sampled: 05/12/05
Date Received: 05/12/05
Date Analyzed: 05/13/05
Method: EPA 8260B
QC Batch #: 5533

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29784	**DW-3450**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.7	104	70 – 130
toluene-d_8 (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	19.5	97.5	70 – 130

Date Sampled:	05/12/05	Date Analyzed:	05/16/05, 05/13/05	QC Batch #:	5533
Date Received:	05/12/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29785	**MW-8**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.7	104	70 – 130
toluene-d_8 (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	19.4	97.0	70 – 130

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5533
Date Received:	05/12/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29786	**MW-12**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.7	104	70 – 130
toluene-d_8 (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	19.7	98.5	70 – 130

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5533
Date Received:	05/12/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29787	**MW-11**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.7	104	70 – 130
toluene-d_8 (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	19.3	96.5	70 – 130

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5533
Date Received:	05/12/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29788	**MW-9**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.6	103	70 – 130
toluene-d_8 (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	19.6	98.0	70 – 130

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5533
Date Received:	05/12/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29789	**MW-5**	**benzene**	**ND (2)**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d_8 (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	19.4	97.0	70 – 130

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5533
Date Received:	05/12/05	Method:	EPA 8260B		

(2) The following additional compound was detected: 1,2-dichloroethane (1.0 ug/L).

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29790	**MW-10**	**benzene**	**55**	10
		toluene	**17**	10
		ethyl benzene	**310**	10
		m,p-xylene	**400**	10
		o-xylene	**26**	10
		acetone	**ND**	10
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	250
		methyl tert-butyl ether (MTBE)	**ND**	10
		di-isopropyl ether (DIPE)	**ND**	10
		ethyl tert-butyl ether (ETBE)	**ND**	10
		tert-amyl methyl ether (TAME)	**ND**	10

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d_8 (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	19.9	99.5	70 – 130

Date Sampled: 05/12/05 Date Analyzed: 05/13/05 QC Batch #: 5533
Date Received: 05/12/05 Method: EPA 8260B

Hexavalent Chromium in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29785	**MW-8**	**Hexavalent Chromium (Cr+6)**	**ND (3)**	0.005

Date Sampled: 05/12/05 | Date Analyzed: 05/13/05 | QC Batch #: 5532
Date Received: 05/12/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29786	**MW-12**	**Hexavalent Chromium (Cr+6)**	**ND (3)**	0.005

Date Sampled: 05/12/05 | Date Analyzed: 05/13/05 | QC Batch #: 5532
Date Received: 05/12/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29787	**MW-11**	**Hexavalent Chromium (Cr+6)**	**ND (3)**	0.005

Date Sampled: 05/12/05 | Date Analyzed: 05/13/05 | QC Batch #: 5532
Date Received: 05/12/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29788	**MW-9**	**Hexavalent Chromium (Cr+6)**	**ND (3)**	0.005

Date Sampled: 05/12/05 | Date Analyzed: 05/13/05 | QC Batch #: 5532
Date Received: 05/12/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29789	**MW-5**	**Hexavalent Chromium (Cr+6)**	**ND (3)**	0.005

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5532
Date Received:	05/12/05	Method:	EPA 7196A		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29790	**MW-10**	**Hexavalent Chromium (Cr+6)**	**ND (3)**	0.005

Date Sampled:	05/12/05	Date Analyzed:	05/13/05	QC Batch #:	5532
Date Received:	05/12/05	Method:	EPA 7196A		

(3) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman graphite furnace (EPA 200.9) resulted in no detection of chromium at a detection limit well below 0.005 mg/L. Hexavalent chromium is not present at the level of 0.005 mg/L.

Bromate and Bromide in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29785	**MW-8**	**Bromate (BrO_3^{-1})**	**ND (4)**	0.015
		Bromide (Br^{-1})	**0.14**	0.020

Date Sampled: 05/12/05 Date Analyzed: 05/16/05 QC Batch #: 5530
Date Received: 05/12/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29786	**MW-12**	**Bromate (BrO_3^{-1})**	**ND (4)**	0.015
		Bromide (Br^{-1})	**0.24**	0.020

Date Sampled: 05/12/05 Date Analyzed: 05/16/05 QC Batch #: 5530
Date Received: 05/12/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29787	**MW-11**	**Bromate (BrO_3^{-1})**	**ND (4)**	0.015
		Bromide (Br^{-1})	**0.25**	0.020

Date Sampled: 05/12/05 Date Analyzed: 05/16/05 QC Batch #: 5530
Date Received: 05/12/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29788	**MW-9**	**Bromate (BrO_3^{-1})**	**ND** (4)	0.015
		Bromide (Br^{-1})	**0.30**	0.020

Date Sampled:	05/12/05	Date Analyzed:	05/16/05	QC Batch #:	5530
Date Received:	05/12/05	Methods:	EPA 300 (IC)		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29789	**MW-5**	**Bromate (BrO_3^{-1})**	**ND** (4)	0.015
		Bromide (Br^{-1})	**0.32**	0.020

Date Sampled:	05/12/05	Date Analyzed:	05/16/05	QC Batch #:	5530
Date Received:	05/12/05	Methods:	EPA 300 (IC)		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29790	**MW-10**	**Bromate (BrO_3^{-1})**	**ND** (4)	0.015
		Bromide (Br^{-1})	**0.41**	0.020

Date Sampled:	05/12/05	Date Analyzed:	05/16/05	QC Batch #:	5530
Date Received:	05/12/05	Methods:	EPA 300 (IC)		

(4) The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.

Metals in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29785	**MW-8**	**Molybdenum (Mo)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Vanadium (V)	**ND**	0.05

Date Sampled: 05/12/05 Date Digested: 05/13/05 QC Batch #: 5531
Date Received: 05/12/05 Date Analyzed: 05/13/05
Methods: EPA 3010/6010, EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29786	**MW-12**	**Molybdenum (Mo)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Vanadium (V)	**ND**	0.05

Date Sampled: 05/12/05 Date Digested: 05/13/05 QC Batch #: 5531
Date Received: 05/12/05 Date Analyzed: 05/13/05
Methods: EPA 3010/6010, EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29787	**MW-11**	**Molybdenum (Mo)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Vanadium (V)	**ND**	0.05

Date Sampled: 05/12/05 Date Digested: 05/13/05 QC Batch #: 5531
Date Received: 05/12/05 Date Analyzed: 05/13/05
Methods: EPA 3010/6010, EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29788	**MW-9**	**Molybdenum (Mo)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Vanadium (V)	**ND**	0.05

Date Sampled: 05/12/05 Date Digested: 05/13/05 QC Batch #: 5531
Date Received: 05/12/05 Date Analyzed: 05/13/05
Methods: EPA 3010/6010, EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29789	**MW-5**	**Molybdenum (Mo)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Vanadium (V)	**ND**	0.05

Date Sampled: 05/12/05 Date Digested: 05/13/05 QC Batch #: 5531
Date Received: 05/12/05 Date Analyzed: 05/13/05
Methods: EPA 3010/6010, EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
29790	**MW-10**	**Molybdenum (Mo)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Vanadium (V)	**ND**	0.05

Date Sampled: 05/12/05 Date Digested: 05/13/05 QC Batch #: 5531
Date Received: 05/12/05 Date Analyzed: 05/13/05
Methods: EPA 3010/6010, EPA 200.9

LABORATORY
QUALITY ASSURANCE REPORT

QC Batch #: 5535 **Lab Project #:** 5051206

Sample ID	Compound	Result (ug/L)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
29782	CMS	TPH/Gas		NS	
	CMS	Benzene	9.10	10.0	91.0
	CMS	Toluene	9.39	10.0	93.9
	CMS	Ethyl Benzene	9.82	10.0	98.2
	CMS	Xylenes	30.0	30.0	99.9

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
29782	CMSD	TPH/Gas		NS		
	CMSD	Benzene	8.68	10.0	86.8	4.8
	CMSD	Toluene	9.02	10.0	90.2	4.0
	CMSD	Ethyl Benzene	9.40	10.0	94.0	4.4
	CMSD	Xylenes	27.4	30.0	94.1	8.9

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5534 **Lab Project #:** 5051206

Sample ID	Compound	Result (ug/L)
MB	TPH/Diesel	ND

Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
LCS	TPH/Diesel	2,060	2,730	75.5

Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
LCSD	TPH/Diesel	2,020	2,730	74.0	2.0

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

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QC Batch #: 5533 **Lab Project #:** 5051206

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d_8 (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	19.9	99.5	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
29783	CMS	1,1-dichloroethene	19.8	25.0	79.2
	CMS	benzene	23.1	25.0	92.4
	CMS	trichloroethene	22.8	25.0	91.2
	CMS	toluene	23.8	25.0	95.2
	CMS	chlorobenzene	24.0	25.0	96.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.5	103	70 – 130
toluene-d_8 (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	19.1	95.5	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
29783	CMSD	1,1-dichloroethene	19.9	25.0	79.6	0.50
	CMSD	benzene	23.2	25.0	92.8	0.43
	CMSD	trichloroethene	22.6	25.0	90.4	0.88
	CMSD	toluene	24.0	25.0	96.0	0.84
	CMSD	chlorobenzene	24.1	25.0	96.4	0.42

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.4	102	70 – 130
toluene-d_8 (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	19.2	96.0	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5532 **Lab Project #:** 5051206

Sample ID	Compound	Result (mg/L)
MB	Hexavalent Chromium (Cr+6)	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Hexavalent Chromium (Cr+6)	0.982	1.00	98.2

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Hexavalent Chromium (Cr+6)	0.976	1.00	97.6	0.61

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5537/5531 **Lab Project #:** 5051206

Sample ID	Compound	Result (mg/L)
MB	Vanadium	ND
MB	Selenium	ND
MB	Molybdenum	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Vanadium	0.481	0.500	96.2
LCS	Selenium	0.0227	0.025	90.8
LCS	Molybdenum	0.509	0.500	102

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Vanadium	0.494	0.500	98.8	2.7
LCSD	Selenium	0.0243	0.025	97.2	8.0
LCSD	Molybdenum	0.518	0.500	104	1.8

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

Analytical Sciences
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CHAIN OF CUSTODY

LAB PROJECT NUMBER: 5051206
WINZLER & KELLY PROJECT NAME: Wiggins Property
WINZLER & KELLY PROJECT NUMBER: 025980500L.3200

CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS
ADDRESS: 495 TESCONI CIRCLE, SUITE 9
SANTA ROSA, CA 95401-4696
CONTACT: Results: Sonja; Questions: Pon
PHONE#: (707) 523-1010
FAX #: (707) 527-8679

TURNAROUND TIME (check one)

MOBILE LAB * Hex Chrome has 24 hr hold time
SAME DAY ____ 24 HOURS ____
48 HOURS ____ 72 HOURS ____
5 DAYS ____ NORMAL X

GEOTRACKER EDF: ^ Y ___ N
GLOBAL ID: T0609700531

COOLER TEMPERATURE
BlueIce °C

COC
PAGE 1 OF 1

ANALYSIS

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/~~BTEX & MTBE~~ EPA 8015M/~~8020~~	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES ~~PETROLEUM~~ EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141/ 8082	CAM 17 METALS / 5 LUFT METALS	EPA 7197 Hex Chrome	EPA 300 Bromate	EPA 6010 W Se, Mo, Bromide	COMMENTS	LAB SAMPLE #
		5/12/05		W	4V	Y	X			X										* Please add	~~29782~~
2	DW-3521	5/12/05	11:50	W	4V	Y	X			X										acetone under	29782
3	DW-3415		10:45	W	4V	Y	X			X										EPA 8260B	29783
4	DW-3452		15:05	W	4V	Y	X			X										* Please provide	29784
5	MW-8		13:30	GB W	4V/40ml	Y/N	X	X		X							X	X	X	Chromatograms	29785
6	MW-12		13:25	~~13:25~~	4V/40ml	Y/N	X	X		X							X	X	X		29786
7	MW-11		13:50	W	4V/40ml	Y/N	X	X		X							X	X	X	* Please set	~~29787~~ 29787
8	MW-9		13:51	W	4V/40ml	Y/N	X	X		X							X	X	X	Hex chrome	29788
9	MW-5		14:07	W	4V/40ml	Y/N	X	X		X							X	X	X	limit @ <5ug/L	~~29789~~ 29789
10	MW-10		13:00	W	~~4V~~ 2x40ml	Y/N	X	X		X							X	X	X	and Bromate	29790
11																				@ <10ug/L	

SIGNATURES

SAMPLED BY: Pon Xayasaeng

RELINQUISHED BY: P. Xayasaeng — SIGNATURE — 5/12/05 — DATE — 15:40 — TIME

RECEIVED BY LABORATORY: [signature] — SIGNATURE — 5/12/05 — DATE — 1540 — TIME

PO Box 750336
Petaluma, CA 94975-0336
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Analytical Sciences

Analytical Sciences

Report Date: July 14, 2005

Pon Xayasaeng
Winzler & Kelly Consulting Engineers
495 Tesconi Circle, Suite 9
Santa Rosa, CA 95401-4696

LABORATORY REPORT

Project Name: **Wiggins Property** **0259805001.32003**

Lab Project Number: **5062309**

This 11 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director

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Volatile Hydrocarbons by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30426	**MW-5**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	19.2	96.0	70 – 130
toluene-d_8 (20)	19.8	99.0	70 – 130
4-bromofluorobenzene (20)	18.4	92.0	70 – 130

Date Sampled: 06/23/05
Date Received: 06/23/05
Date Analyzed: 06/27/05
Method: EPA 8260B
QC Batch #: 5615

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30427	**MW-9**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	18.7	93.5	70 – 130
toluene-d_8 (20)	19.5	97.5	70 – 130
4-bromofluorobenzene (20)	18.0	90.0	70 – 130

Date Sampled:	06/23/05	Date Analyzed:	06/24/05	QC Batch #:	5615
Date Received:	06/23/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30428	**MW-10**	**benzene**	**160**	10
		toluene	**48**	10
		ethyl benzene	**360**	10
		m,p-xylene	**710**	10
		o-xylene	**46**	10
		acetone	**ND**	10
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	10
		di-isopropyl ether (DIPE)	**ND**	10
		ethyl tert-butyl ether (ETBE)	**ND**	10
		tert-amyl methyl ether (TAME)	**ND**	10

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	19.0	95.0	70 – 130
toluene-d_8 (20)	19.8	99.0	70 – 130
4-bromofluorobenzene (20)	18.8	94.0	70 – 130

Date Sampled:	06/23/05	Date Analyzed:	06/27/05	QC Batch #:	5615
Date Received:	06/23/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30429	**MW-8**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	18.7	93.5	70 – 130
toluene-d_8 (20)	19.5	97.5	70 – 130
4-bromofluorobenzene (20)	17.9	89.5	70 – 130

Date Sampled:	06/23/05	Date Analyzed:	06/24/05	QC Batch #:	5615
Date Received:	06/23/05	Method:	EPA 8260B		

Hexavalent Chromium in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30426	**MW-5**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled:	06/23/05	Date Analyzed:	06/23/05	QC Batch #:	5612
Date Received:	06/23/05	Method:	EPA 7196A		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30427	**MW-9**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled:	06/23/05	Date Analyzed:	06/23/05	QC Batch #:	5612
Date Received:	06/23/05	Method:	EPA 7196A		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30428	**MW-10**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled:	06/23/05	Date Analyzed:	06/23/05	QC Batch #:	5612
Date Received:	06/23/05	Method:	EPA 7196A		

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30429	**MW-8**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled:	06/23/05	Date Analyzed:	06/23/05	QC Batch #:	5612
Date Received:	06/23/05	Method:	EPA 7196A		

(1) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman graphite furnace (EPA 200.9) resulted in no detection of chromium at a detection limit well below 0.005 mg/L. Hexavalent chromium is not present at the level of 0.005 mg/L.

Bromate and Bromide in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30426	**MW-5**	**Bromate (BrO_3^{-1})**	**ND (2)**	0.015
		Bromide (Br^{-1})	**0.39**	0.030

Date Sampled: 06/23/05 Date Analyzed: 06/24/05 QC Batch #: 5613
Date Received: 06/23/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30427	**MW-9**	**Bromate (BrO_3^{-1})**	**ND (2)**	0.015
		Bromide (Br^{-1})	**0.18**	0.030

Date Sampled: 06/23/05 Date Analyzed: 06/24/05 QC Batch #: 5613
Date Received: 06/23/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30428	**MW-10**	**Bromate (BrO_3^{-1})**	**ND (2)**	0.015
		Bromide (Br^{-1})	**0.38**	0.030

Date Sampled: 06/23/05 Date Analyzed: 06/24/05 QC Batch #: 5613
Date Received: 06/23/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30429	**MW-8**	**Bromate (BrO_3^{-1})**	**ND (2)**	0.015
		Bromide (Br^{-1})	**0.072**	0.030

Date Sampled: 06/23/05 Date Analyzed: 06/24/05 QC Batch #: 5613
Date Received: 06/23/05 Methods: EPA 300 (IC)

(2) The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the detection limit.

Metals in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30426	**MW-5**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/23/05 Date Digested: 06/24/05 QC Batch #: 5614, 5598
Date Received: 06/23/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30427	**MW-9**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/23/05 Date Digested: 06/24/05 QC Batch #: 5614, 5598
Date Received: 06/23/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30428	**MW-10**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/23/05 Date Digested: 06/24/05 QC Batch #: 5614, 5598
Date Received: 06/23/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30429	**MW-8**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/23/05 Date Digested: 06/24/05 QC Batch #: 5614, 5598
Date Received: 06/23/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010, 200.9

LABORATORY
QUALITY ASSURANCE REPORT

QC Batch #: 5615 **Lab Project #:** 5062309

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	18.9	94.5	70 – 130
toluene-d_8 (20)	19.2	96.0	70 – 130
4-bromofluorobenzene (20)	17.8	89.0	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
30385	CMS	1,1-dichloroethene	23.9	25.0	95.6
	CMS	benzene	23.4	25.0	93.6
	CMS	trichloroethene	22.1	25.0	88.4
	CMS	toluene	23.7	25.0	94.8
	CMS	chlorobenzene	24.2	25.0	96.8

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	18.5	92.5	70 – 130
toluene-d_8 (20)	19.5	97.5	70 – 130
4-bromofluorobenzene (20)	18.1	90.5	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
30385	CMSD	1,1-dichloroethene	24.0	25.0	96.0	0.42
	CMSD	benzene	23.5	25.0	94.0	0.43
	CMSD	trichloroethene	22.0	25.0	88.0	0.45
	CMSD	toluene	23.8	25.0	95.2	0.42
	CMSD	chlorobenzene	24.2	25.0	96.8	0.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	18.5	92.5	70 – 130
toluene-d_8 (20)	19.5	97.5	70 – 130
4-bromofluorobenzene (20)	17.9	89.5	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5612 **Lab Project #:** 5062309

Sample ID	Compound	Result (mg/L)
MB	Hexavalent Chromium (Cr+6)	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Hexavalent Chromium (Cr+6)	1.03	1.00	103

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Hexavalent Chromium (Cr+6)	1.04	1.00	104	0.97

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

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CHAIN OF CUSTODY

LAB PROJECT NUMBER: 5062309
WINZLER & KELLY PROJECT NAME: Wiggins Property
WINZLER & KELLY PROJECT NUMBER: 0259805001.32003

CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS
ADDRESS: 495 TESCONI CIRCLE, SUITE 9
SANTA ROSA, CA 95401-4696
CONTACT: Results: Sonya; Questions: Ron
PHONE#: (707) 523-1010
FAX #: (707) 527-8679

TURNAROUND TIME (check one)

MOBILE LAB ____ 24 HOURS ____
SAME DAY ____ 72 HOURS ____
48 HOURS ____ NORMAL X
5 DAYS ____

GEOTRACKER EDF: X Y ___ N
GLOBAL ID: T10097005531

COOLER TEMPERATURE
Blue Ice °C

COC
PAGE 1 OF 1

ANALYSIS

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX & MTBE EPA 8015M/8020	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES + PB SCAVENGERS EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	CAM 17 METALS / 5 LUFT METALS	EPA 7187 Hex Chrome	EPA 300 Bromate	EPA 6010 V, Se, Mo, Br	COMMENTS	LAB SAMPLE #
1	MW-5	6/23/05	10:03	W	7	Y/N				X							X	X	X	* Please add	30426
2	MW-9	↓	10:10	↓	↓	↓				↓							↓	↓	↓	Acetone to	30427
3	MW-10		10:15																	EPA 8260B	30428
4	MW-8	↓	10:30	↓	↓	↓				↓							↓	↓	↓		30429
5																				* Please set	
6																				Hex Chrome	
7																				limit @ <5ug/L	
8																				and Bromate	
9																				@ <10ug/L	
10																					
11																					

SIGNATURES

SAMPLED BY: Ron Kayasaeng
RELINQUISHED BY: _____ 6/23/05 10:41
SIGNATURE DATE TIME
RECEIVED BY LABORATORY: _____ 6/23/05 10:41
SIGNATURE DATE TIME

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Analytical Sciences

Analytical Sciences

Report Date: July 15, 2005

Pon Xayasaeng
Winzler & Kelly Consulting Engineers
495 Tesconi Circle, Suite 9
Santa Rosa, CA 95401-4696

LABORATORY REPORT

Project Name: **Wiggins** **0259805001.32003**

Lab Project Number: **5063003**

This 10 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director

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Volatile Hydrocarbons by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30595	**MW-8**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.0	105	70 – 130
toluene-d_8 (20)	19.7	98.5	70 – 130
4-bromofluorobenzene (20)	19.9	99.5	70 – 130

Date Sampled: 06/30/05
Date Received: 06/30/05
Date Analyzed: 07/01/05
Method: EPA 8260B
QC Batch #: 5631

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30596	**MW-5**	**benzene**	**5.3**	1.0
		toluene	**1.3**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d_8 (20)	19.9	99.5	70 – 130
4-bromofluorobenzene (20)	20.3	102	70 – 130

Date Sampled:	06/30/05	Date Analyzed:	07/01/05	QC Batch #:	5631
Date Received:	06/30/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30597	**MW-9**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.6	103	70 – 130
toluene-d_8 (20)	19.6	98.0	70 – 130
4-bromofluorobenzene (20)	20.2	101	70 – 130

Date Sampled:	06/30/05	Date Analyzed:	07/01/05	QC Batch #:	5631
Date Received:	06/30/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30598	**MW-10**	**benzene**	**140**	20
		toluene	**42**	20
		ethyl benzene	**270**	20
		m,p-xylene	**490**	20
		o-xylene	**37**	20
		acetone	**ND**	20
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	500
		methyl tert-butyl ether (MTBE)	**ND**	20
		di-isopropyl ether (DIPE)	**ND**	20
		ethyl tert-butyl ether (ETBE)	**ND**	20
		tert-amyl methyl ether (TAME)	**ND**	20

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	19.3	96.5	70 – 130
toluene-d_8 (20)	19.9	99.5	70 – 130
4-bromofluorobenzene (20)	20.5	103	70 – 130

Date Sampled:	06/30/05	Date Analyzed:	07/01/05	QC Batch #:	5631
Date Received:	06/30/05	Method:	EPA 8260B		

Hexavalent Chromium in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30595	**MW-8**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/30/05 | Date Analyzed: 06/30/05 | QC Batch #: 5633
Date Received: 06/30/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30596	**MW-5**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/30/05 | Date Analyzed: 06/30/05 | QC Batch #: 5633
Date Received: 06/30/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30597	**MW-9**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/30/05 | Date Analyzed: 06/30/05 | QC Batch #: 5633
Date Received: 06/30/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30598	**MW-10**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/30/05 | Date Analyzed: 06/30/05 | QC Batch #: 5633
Date Received: 06/30/05 | Method: EPA 7196A

(1) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman graphite furnace (EPA 200.9) resulted in no detection of chromium at a detection limit well below 0.005 mg/L. Hexavalent chromium is not present at the level of 0.005 mg/L.

Bromate and Bromide in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30595	**MW-8**	**Bromate (BrO_3^{-1})**	**ND**	0.010
		Bromide (Br^{-1})	**0.074**	0.020

Date Sampled: 06/30/05 Date Analyzed: 07/01/05 QC Batch #: 5647
Date Received: 06/30/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30596	**MW-5**	**Bromate (BrO_3^{-1})**	**ND** (2)	0.015
		Bromide (Br^{-1})	**0.41**	0.030

Date Sampled: 06/30/05 Date Analyzed: 07/01/05 QC Batch #: 5647
Date Received: 06/30/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30597	**MW-9**	**Bromate (BrO_3^{-1})**	**ND** (2)	0.015
		Bromide (Br^{-1})	**0.42**	0.030

Date Sampled: 06/30/05 Date Analyzed: 07/01/05 QC Batch #: 5647
Date Received: 06/30/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30598	**MW-10**	**Bromate (BrO_3^{-1})**	**ND** (2)	0.015
		Bromide (Br^{-1})	**0.38**	0.030

Date Sampled: 06/30/05 Date Analyzed: 07/01/05 QC Batch #: 5647
Date Received: 06/30/05 Methods: EPA 300 (IC)

(2) The sample required a dilution due to the presence of a matrix interference. The dilution resulted in a slight increase in the reported detection limit.

Metals in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30595	**MW-8**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/30/05 Date Digested: 06/24/05 QC Batch #: 5614
Date Received: 06/30/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30596	**MW-5**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/30/05 Date Digested: 06/24/05 QC Batch #: 5614
Date Received: 06/30/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30597	**MW-9**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/30/05 Date Digested: 06/24/05 QC Batch #: 5614
Date Received: 06/30/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30598	**MW-10**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/30/05 Date Digested: 06/24/05 QC Batch #: 5614
Date Received: 06/30/05 Date Analyzed: 06/24/05
Method: EPA 3010/6010, 200.9

LABORATORY
QUALITY ASSURANCE REPORT

QC Batch #: 5631 **Lab Project #:** 5063003

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d_8 (20)	19.9	99.5	70 – 130
4-bromofluorobenzene (20)	19.5	97.5	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
30581	CMS	1,1-dichloroethene	31.1	25.0	124
	CMS	benzene	25.6	25.0	102
	CMS	trichloroethene	24.1	25.0	96.4
	CMS	toluene	24.7	25.0	98.8
	CMS	chlorobenzene	24.5	25.0	98.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	19.8	99.0	70 – 130
toluene-d_8 (20)	20.0	100	70 – 130
4-bromofluorobenzene (20)	19.0	95.0	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
30581	CMSD	1,1-dichloroethene	30.6	25.0	122	1.6
	CMSD	benzene	25.6	25.0	102	0.0
	CMSD	trichloroethene	23.7	25.0	94.8	1.7
	CMSD	toluene	24.7	25.0	98.8	0.0
	CMSD	chlorobenzene	24.3	25.0	97.2	0.82

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.0	100	70 – 130
toluene-d_8 (20)	19.9	99.5	70 – 130
4-bromofluorobenzene (20)	19.0	95.0	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5633 **Lab Project #:** 5063003

Sample ID	Compound	Result (mg/L)
MB	Hexavalent Chromium (Cr+6)	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Hexavalent Chromium (Cr+6)	1.01	1.00	101

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Hexavalent Chromium (Cr+6)	0.996	1.00	99.6	1.8

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

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CHAIN OF CUSTODY

LAB PROJECT NUMBER: 506300 3
WINZLER & KELLY PROJECT NAME: Wiggins
WINZLER & KELLY PROJECT NUMBER: 0259805001.32003

CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS
ADDRESS: 495 TESCONI CIRCLE, SUITE 9
SANTA ROSA, CA 95401-4696
CONTACT: Results: Sonya ; Q's: Pon
PHONE#: (707) 523-1010
FAX #: (707) 527-8679

TURNAROUND TIME (check one)

MOBILE LAB ____ SAME DAY ____ 24 HOURS ____
48 HOURS ____ 72 HOURS ____
5 DAYS ____ NORMAL X

GEOTRACKER EDF: X Y ___ N
GLOBAL ID: T0609705531

COOLER TEMPERATURE ____ °C

COC
PAGE 1 OF 1

ANALYSIS

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX & MTBE EPA 8015M/8020	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141/ 8082	CAM 17 METALS / 5 LUFT METALS	EPA 7197 Hex Chrome	EPA 300 Bromate	EPA 6010 V, Se, Mo, Bo	COMMENTS	LAB SAMPLE #
1	mw-8	06/30/05	10:48	W	7	Y/N				X							X	X	X	Add Acetone under	30595
2	mw-5	"	10:39	"	"	"				X							X	X	X	8260B for each	30596
3	mw-9	"	10:46	"	"	"				X							X	X	X		30597
4	mw-10	"	10:30	"	"	"				X							X	X	X	Set hex chrome	30598
5																				limit @ < 5 µg/L	
6																				and Bromate	
7																				@ < 10 µg/L	
8																					
9																					
10																					
11																					

SIGNATURES

SAMPLED BY: Pon X. & Brian B.

RELINQUISHED BY: Brian Bazzarini — SIGNATURE
6-30-05 11:30 — DATE / TIME

RECEIVED BY LABORATORY: C Ricco — SIGNATURE
6-30-05 11:30 — DATE / TIME

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Analytical Sciences

Analytical Sciences

Report Date: July 20, 2005

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LABORATORY REPORT

Project Name: **Wiggins Property** **0259805001.32003**

Lab Project Number: **5061411**

This 10 page report of analytical data has been reviewed and approved for release.

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Volatile Hydrocarbons by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30206	**MW-8**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.0	105	70 – 130
toluene-d_8 (20)	20.5	103	70 – 130
4-bromofluorobenzene (20)	19.1	95.5	70 – 130

Date Sampled: 06/14/05
Date Received: 06/14/05
Date Analyzed: 06/15/05
Method: EPA 8260B
QC Batch #: 5590

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30207	**MW-5**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**1.0**	1.0
		m,p-xylene	**2.1**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**37**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d_8 (20)	20.5	103	70 – 130
4-bromofluorobenzene (20)	18.9	94.5	70 – 130

Date Sampled:	06/14/05	Date Analyzed:	06/15/05	QC Batch #:	5590
Date Received:	06/14/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30208	**MW-9**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.0	105	70 – 130
toluene-d_8 (20)	20.4	102	70 – 130
4-bromofluorobenzene (20)	18.8	94.0	70 – 130

Date Sampled:	06/14/05	Date Analyzed:	06/15/05	QC Batch #:	5590
Date Received:	06/14/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30209	**MW-10**	**benzene**	**170**	10
		toluene	**50**	10
		ethyl benzene	**450**	10
		m,p-xylene	**790**	10
		o-xylene	**55**	10
		acetone	**ND**	10
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	250
		methyl tert-butyl ether (MTBE)	**ND**	10
		di-isopropyl ether (DIPE)	**ND**	10
		ethyl tert-butyl ether (ETBE)	**ND**	10
		tert-amyl methyl ether (TAME)	**ND**	10

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d_8 (20)	20.6	103	70 – 130
4-bromofluorobenzene (20)	19.2	96.0	70 – 130

Date Sampled:	06/14/05	Date Analyzed:	06/15/05	QC Batch #:	5590
Date Received:	06/14/05	Method:	EPA 8260B		

Hexavalent Chromium in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30206	**MW-8**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/14/05 | Date Analyzed: 06/14/05 | QC Batch #: 5586
Date Received: 06/14/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30207	**MW-5**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/14/05 | Date Analyzed: 06/14/05 | QC Batch #: 5586
Date Received: 06/14/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30208	**MW-9**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/14/05 | Date Analyzed: 06/14/05 | QC Batch #: 5586
Date Received: 06/14/05 | Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30209	**MW-10**	**Hexavalent Chromium (Cr+6)**	**ND (1)**	0.005

Date Sampled: 06/14/05 | Date Analyzed: 06/14/05 | QC Batch #: 5586
Date Received: 06/14/05 | Method: EPA 7196A

(1) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman Graphite Furnace (EPA 200.9) resulted in no detection of chromium at a detection limit below 0.005 mg/L. Hexavalent Chromium is not present at a level above 0.005 mg/L.

Bromate and Bromide in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30206	**MW-8**	**Bromate (BrO_3^{-1})**	**ND**	0.010
		Bromide (Br^{-1})	**0.094**	0.020

Date Sampled: 06/14/05 Date Analyzed: 06/15/05 QC Batch #: 5589
Date Received: 06/14/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30207	**MW-5**	**Bromate (BrO_3^{-1})**	**ND (2)**	0.015
		Bromide (Br^{-1})	**0.37**	0.030

Date Sampled: 06/14/05 Date Analyzed: 06/15/05 QC Batch #: 5589
Date Received: 06/14/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30208	**MW-9**	**Bromate (BrO_3^{-1})**	**ND (2)**	0.015
		Bromide (Br^{-1})	**0.26**	0.030

Date Sampled: 06/14/05 Date Analyzed: 06/15/05 QC Batch #: 5589
Date Received: 06/14/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30209	**MW-10**	**Bromate (BrO_3^{-1})**	**ND (2)**	0.015
		Bromide (Br^{-1})	**0.41**	0.030

Date Sampled: 06/14/05 Date Analyzed: 06/15/05 QC Batch #: 5589
Date Received: 06/14/05 Methods: EPA 300 (IC)

(2) The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.

Lab Project #: 5061411 CA Lab Accreditation #: 2303

Metals in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30206	**MW-8**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/14/05 Date Digested: 06/15/05 QC Batch #: 5570
Date Received: 06/14/05 Date Analyzed: 06/16/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30207	**MW-5**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/14/05 Date Digested: 06/15/05 QC Batch #: 5570
Date Received: 06/14/05 Date Analyzed: 06/16/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30208	**MW-9**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/14/05 Date Digested: 06/15/05 QC Batch #: 5570
Date Received: 06/14/05 Date Analyzed: 06/16/05
Method: EPA 3010/6010, 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30209	**MW-10**	**Vanadium (V)**	**ND**	0.05
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.05

Date Sampled: 06/14/05 Date Digested: 06/15/05 QC Batch #: 5570
Date Received: 06/14/05 Date Analyzed: 06/16/05
Method: EPA 3010/6010,200.9

LABORATORY
QUALITY ASSURANCE REPORT

QC Batch #: 5590 **Lab Project #:** 5061411

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.5	103	70 – 130
toluene-d_8 (20)	20.4	102	70 – 130
4-bromofluorobenzene (20)	19.0	95.0	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
30210	CMS	1,1-dichloroethene	29.6	25.0	118
	CMS	benzene	26.3	25.0	105
	CMS	trichloroethene	25.6	25.0	102
	CMS	toluene	25.9	25.0	103
	CMS	chlorobenzene	25.2	25.0	101

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d_8 (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	19.1	95.5	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
30210	CMSD	1,1-dichloroethene	28.8	25.0	115	2.7
	CMSD	benzene	26.0	25.0	104	1.1
	CMSD	trichloroethene	25.2	25.0	101	1.6
	CMSD	toluene	25.5	25.0	101	1.6
	CMSD	chlorobenzene	25.0	25.0	100	0.80

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d_8 (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	19.3	96.5	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5586 **Lab Project #:** 5061411

Sample ID	Compound	Result (mg/L)
MB	Hexavalent Chromium (Cr+6)	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Hexavalent Chromium (Cr+6)	1.04	1.00	104

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Hexavalent Chromium (Cr+6)	1.03	1.00	103	1.2

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

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Analytical Sciences
P.O. Box 750336, Petaluma, CA 94975-0336
110 Liberty Street, Petaluma, CA 94952
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CHAIN OF CUSTODY

LAB PROJECT NUMBER: 50614111
WINZLER & KELLY PROJECT NAME: Wiggins Property
WINZLER & KELLY PROJECT NUMBER: 025980500I.32003

GEOTRACKER EDF: X Y ___ N
GLOBAL ID: T0609700531

COOLER TEMPERATURE: Blue Ice °C

COC PAGE 1 OF 1

CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS
ADDRESS: 495 TESCONI CIRCLE, SUITE 9
SANTA ROSA, CA 95401-4696
CONTACT: Results: Sonya ; Questions: Pon
PHONE#: (707) 523-1010
FAX #: (707) 527-8679

TURNAROUND TIME (check one)

MOBILE LAB ___ 24 HOURS ___
SAME DAY ___ 72 HOURS ___
48 HOURS ___ NORMAL X
5 DAYS ___

ANALYSIS

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	EI	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES + ~~35 OXYGENATES~~ EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8250M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141/ 8082	CAM 17 METALS / 5 LUFT METALS	EPA 7197 Hex. Chrome	EPA 300 Bromate	EPA 6010 V, Se, Mo, Boron	COMMENTS	LAB SAMPLE #
1	MW-8	6/14/05	10:59	W	8*	Y/N				X							X	X	X	*Please add	30206
2	MW-5	↓	10:48	↓	↓	↓				↓							↓	↓	↓	acetone under	30207
3	MW-9		11:12																	EPA 8260B	30208
4	MW-10		11:01																	*Please set	30209
5																				Hex chrome limit	
6																				@ <5 µg/L and	
7																				bromate @ <10µg/L	
8																				~~*Please provide~~	
9																				~~Chromatograms~~	
10																					
11																					

SIGNATURES

SAMPLED BY: Pon Xayasaeng

RELINQUISHED BY: P. Xayasaeng — SIGNATURE — 6/14/05 — DATE — 13:12 — TIME

RECEIVED BY LABORATORY: Corrina Salvadera — SIGNATURE — 6/14/05 — DATE — 1:45 — TIME

6/14/05 1:42

110 Liberty Street
Petaluma, CA 94952
Fax: (707) 769-8093

Analytical Sciences

Analytical Sciences

Report Date: July 29, 2005

Pon Xayasaeng
Winzler & Kelly Consulting Engineers
495 Tesconi Circle, Suite 9
Santa Rosa, CA 95401-4696

LABORATORY REPORT

Project Name: **Wiggins Property** **0259805001.32003**

Lab Project Number: **5070805**

This 11 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director

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Volatile Hydrocarbons by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30849	**MW-8**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.7	104	70 – 130
toluene-d_8 (20)	20.2	101	70 – 130
4-bromofluorobenzene (20)	19.5	97.5	70 – 130

Date Sampled:	07/08/05	Date Analyzed:	07/11/05	QC Batch #:	5656
Date Received:	07/08/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30850	**MW-5**	**benzene**	**15 (1)**	1.0
		toluene	**1.2**	1.0
		ethyl benzene	**2.0**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	19.8	99.0	70 – 130
toluene-d_8 (20)	20.4	102	70 – 130
4-bromofluorobenzene (20)	19.4	97.0	70 – 130

Date Sampled:	07/08/05	Date Analyzed:	07/11/05	QC Batch #:	5656
Date Received:	07/08/05	Method:	EPA 8260B		

(1) The following additional compound was detected: 1,2-dichloroethane (1.4 ug/L).

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30851	**MW-10**	**benzene**	**220**	5.0
		toluene	**81**	5.0
		ethyl benzene	**460**	5.0
		m,p-xylene	**900**	5.0
		o-xylene	**57**	5.0
		acetone	**ND**	5.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	120
		methyl tert-butyl ether (MTBE)	**ND**	5.0
		di-isopropyl ether (DIPE)	**ND**	5.0
		ethyl tert-butyl ether (ETBE)	**ND**	5.0
		tert-amyl methyl ether (TAME)	**ND**	5.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d_8 (20)	20.6	103	70 – 130
4-bromofluorobenzene (20)	20.0	100	70 – 130

Date Sampled:	07/08/05	Date Analyzed:	07/11/05	QC Batch #:	5656
Date Received:	07/08/05	Method:	EPA 8260B		

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
30852	**MW-9**	**benzene**	**ND**	1.0
		toluene	**ND**	1.0
		ethyl benzene	**ND**	1.0
		m,p-xylene	**ND**	1.0
		o-xylene	**ND**	1.0
		acetone	**ND**	1.0
		Oxygenated Gasoline Additives		
		tert-butyl alcohol (TBA)	**ND**	25
		methyl tert-butyl ether (MTBE)	**ND**	1.0
		di-isopropyl ether (DIPE)	**ND**	1.0
		ethyl tert-butyl ether (ETBE)	**ND**	1.0
		tert-amyl methyl ether (TAME)	**ND**	1.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	19.8	99.0	70 – 130
toluene-d_8 (20)	20.4	102	70 – 130
4-bromofluorobenzene (20)	19.7	98.5	70 – 130

Date Sampled:	07/08/05	Date Analyzed:	07/11/05	QC Batch #:	5656
Date Received:	07/08/05	Method:	EPA 8260B		

Hexavalent Chromium in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30849	**MW-8**	**Hexavalent Chromium (Cr+6)**	**ND (2)**	0.005

Date Sampled: 07/08/05 Date Analyzed: 07/08/05 QC Batch #: 5662
Date Received: 07/08/05 Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30850	**MW-5**	**Hexavalent Chromium (Cr+6)**	**ND (2)**	0.005

Date Sampled: 07/08/05 Date Analyzed: 07/08/05 QC Batch #: 5662
Date Received: 07/08/05 Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30851	**MW-10**	**Hexavalent Chromium (Cr+6)**	**ND (2)**	0.005

Date Sampled: 07/08/05 Date Analyzed: 07/08/05 QC Batch #: 5662
Date Received: 07/08/05 Method: EPA 7196A

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30852	**MW-9**	**Hexavalent Chromium (Cr+6)**	**ND (2)**	0.005

Date Sampled: 07/08/05 Date Analyzed: 07/08/05 QC Batch #: 5662
Date Received: 07/08/05 Method: EPA 7196A

(2) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman graphite furnace (EPA 200.9) resulted in no detection of chromium at a detection limit well below 0.005 mg/L. Hexavalent chromium is not present at the level of 0.005 mg/L.

Bromate and Bromide in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30849	**MW-8**	**Bromate (BrO_3^{-1})**	**ND**	0.010
		Bromide (Br^{-1})	**0.074**	0.020

Date Sampled: 07/08/05 Date Analyzed: 07/12/05 QC Batch #: 5686
Date Received: 07/08/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30850	**MW-5**	**Bromate (BrO_3^{-1})**	**ND** (3)	0.015
		Bromide (Br^{-1})	**0.41**	0.020

Date Sampled: 07/08/05 Date Analyzed: 07/12/05 QC Batch #: 5686
Date Received: 07/08/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30851	**MW-10**	**Bromate (BrO_3^{-1})**	**ND** (3)	0.015
		Bromide (Br^{-1})	**0.38**	0.020

Date Sampled: 07/08/05 Date Analyzed: 07/12/05 QC Batch #: 5686
Date Received: 07/08/05 Methods: EPA 300 (IC)

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30852	**MW-9**	**Bromate (BrO_3^{-1})**	**ND** (3)	0.015
		Bromide (Br^{-1})	**0.12**	0.020

Date Sampled: 07/08/05 Date Analyzed: 07/12/05 QC Batch #: 5686
Date Received: 07/08/05 Methods: EPA 300 (IC)

(3) A dilution was necessary due to a matrix interference. The dilution resulted in a very slight increase in the reported detection limit.

Metals in Water

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30849	**MW-8**	**Vanadium (V)**	**ND**	0.020
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.020

Date Sampled: 07/08/05 Date Digested: 07/12/05, 07/13/05 QC Batch #: 5652, 5663
Date Received: 07/08/05 Date Analyzed: 07/13/05
Method: EPA 3010/6010; EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30850	**MW-5**	**Vanadium (V)**	**ND**	0.020
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.020

Date Sampled: 07/08/05 Date Digested: 07/12/05, 07/13/05 QC Batch #: 5652,5663
Date Received: 07/08/05 Date Analyzed: 07/13/05
Method: EPA 3010/6010; EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30851	**MW-10**	**Vanadium (V)**	**ND**	0.020
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.020

Date Sampled: 07/08/05 Date Digested: 07/12/05,07/13/05 QC Batch #: 5652,5663
Date Received: 07/08/05 Date Analyzed: 07/13/05
Method: EPA 3010/6010; EPA 200.9

Lab #	Sample ID	Analysis	Result (mg/L)	RDL (mg/L)
30852	**MW-9**	**Vanadium (V)**	**ND**	0.020
		Selenium (Se)	**ND**	0.005
		Molybdenum (Mo)	**ND**	0.020

Date Sampled: 07/08/05 Date Digested: 07/12/05,07/13/05 QC Batch #: 5652,5663
Date Received: 07/08/05 Date Analyzed: 07/13/05
Method: EPA 3010/6010; EPA 200.9

LABORATORY
QUALITY ASSURANCE REPORT

QC Batch #: 5656 **Lab Project #:** 5070805

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d_8 (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	19.0	95.0	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
30738	CMS	1,1-dichloroethene	29.6	25.0	118
	CMS	benzene	24.7	25.0	98.8
	CMS	trichloroethene	23.2	25.0	92.8
	CMS	toluene	24.0	25.0	96.0
	CMS	chlorobenzene	23.0	25.0	92.0

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.1	101	70 – 130
toluene-d_8 (20)	20.1	101	70 – 130
4-bromofluorobenzene (20)	19.0	95.0	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
30738	CMSD	1,1-dichloroethene	29.7	25.0	119	0.34
	CMSD	benzene	24.9	25.0	99.6	0.81
	CMSD	trichloroethene	23.2	25.0	92.8	0.00
	CMSD	toluene	24.2	25.0	96.8	0.83
	CMSD	chlorobenzene	22.8	25.0	91.2	0.87

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.1	101	70 – 130
toluene-d_8 (20)	20.4	102	70 – 130
4-bromofluorobenzene (20)	19.0	95.0	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5662 **Lab Project #:** 5070805

Sample ID	Compound	Result (mg/L)
MB	Hexavalent Chromium (Cr+6)	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Hexavalent Chromium (Cr+6)	1.03	1.00	103

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Hexavalent Chromium (Cr+6)	1.01	1.00	101	2.4

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

QC Batch #: 5663 **Lab Project #:** 5070805

Sample ID	Compound	Result (mg/L)
MB	Vanadium (V)	ND
MB	Molybdenum (Mo)	ND

Sample #	Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
30744	CMS	Vanadium (V)	0.055	0.050	110
	CMS	Molybdenum (Mo)	0.051	0.050	103

Sample #	Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
30744	CMSD	Vanadium (V)	0.055	0.050	109	0.37
	CMSD	Molybdenum (Mo)	0.055	0.050	112	8.8

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

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QC Batch #: 5652 **Lab Project #:** 5070805

Sample ID	Compound	Result (mg/L)
MB	Selenium (Se)	ND

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.
LCS	Selenium (Se)	0.023	0.025	92.0

Sample ID	Compound	Result (mg/L)	Spike Level	% Recv.	RPD
LCSD	Selenium (Se)	0.023	0.025	93.2	1.3

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery

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Analytical Sciences
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CHAIN OF CUSTODY

LAB PROJECT NUMBER: 5070805
WINZLER & KELLY PROJECT NAME: Wiggins Property
WINZLER & KELLY PROJECT NUMBER: 02598050001.32003

CLIENT INFORMATION

COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS
ADDRESS: 495 TESCONI CIRCLE, SUITE 9
SANTA ROSA, CA 95401-4696
CONTACT: Results: Sonya; Questions: Pon
PHONE#: (707) 523-1010
FAX #: (707) 527-8679

TURNAROUND TIME (check one)

MOBILE LAB			
SAME DAY		24 HOURS	
48 HOURS		72 HOURS	
5 DAYS		NORMAL	X

GEOTRACKER EDF: X Y ___ N
GLOBAL ID: T0609700531

COOLER TEMPERATURE: Blue Ice °C

COC PAGE 1 OF 1

ANALYSIS

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX & MTBE EPA 8015M/8020	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260B (FULL LIST)	BTEX & OXYGENATES ~~+ PB SCAVENGERS~~ EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	CAM 17 METALS / 5 LUFT METALS	EPA 7197 Hex Chrome	EPA 300 Bromate	EPA 6010 V, Se, Mo, Bromide	COMMENTS	LAB SAMPLE #
1	MW-8	7/8/05	10:04	W	7	Y/N				X							X	X	X	*Add acetone	30849
2	MW-5	↓	10:06	↓	↓	↓				↓							↓	↓	↓	under EPA	30850
3	MW-10	↓	10:18	↓	↓	↓				↓							↓	↓	↓	8260B	30851
4	MW-9	↓	10:20	↓	↓	↓				↓											30852
5																				* Set Hex.	
6																				chrome limit	
7																				@ < 5ug/L	
8																				& Bromate	
9																				@ < 10ug/L	
10																					
11																					

SIGNATURES

SAMPLED BY: Pon Xayasaeng & Brian B

RELINQUISHED BY: P. Xayasaeng (SIGNATURE) — DATE: 7/8/05 — TIME: 10:30

RECEIVED BY LABORATORY: Riccio (SIGNATURE) — DATE: 7/8/05 — TIME: 10:30

Appendix E
Boring Logs

Explanation for Winzler & Kelly Boring Logs

Coarse Grained Soils (more than half of soil > No. 200 sieve)	Gravels (More than half of coarse fraction > no. 4 sieve size)		GW	Well graded gravels or gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
			GM	Sandy gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-silt mixtures
	Sands (More than half of coarse fraction < no. 4 sieve size)		SW	Well graded sands or gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
			SM	Silty sands, sand-silt mixtures
			SC	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
Fine Grained Soils (more than half of soil < No. 200 sieve)	Silts and Clays LL = < 50		ML	Inorganic silts and very fine sands, rock flour, silty fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays LL = > 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic silts of high plasticity, fat clays
			OH	Organic clays of high plasticity, organic silty clays, organic silts
Highly Organic Soils			Pt	Peat and other highly organic soils

Grain Size Chart

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size In Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel	3" to No. 4	76.2 to 7.76
coarse	3" to 3/4"	76.2 to 4.76
fine	3/4"to No.4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
coarse	No.4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.074
Silt and Clay	Below No. 200	Below 0.074

Relative Density (SPT)

SANDS AND GRAVELS	BLOWS/FOOT
VERY LOOSE	0 – 4
LOOSE	4 – 10
MEDIUM DENSE	10 – 30
DENSE	32 – 50
VERY DENSE	OVER 50

Consistency (SPT)

SILTS AND CLAYS	BLOWS/FOOT
VERY SOFT	0 – 2
SOFT	2 – 4
MEDIUM STIFF	4 – 8
STIFF	8 – 16
VERY STIFF	16 – 22
HARD	OVER 32

▽ Initial water level measured during drilling (date in italics)

▼ Static water level measured after well development (date in italics)

× Depths where soil samples were recovered

BORING LOG

PROJ. NAME: Wiggins Property	PROJECT NO.: 0259805001	Sheet 1 of 1	
METHOD OF DRILL: 8" Auger	LOCATION: 3454 Santa Rosa Ave		
SAMPLER: Split Spoon OD: ID:	LOGGED BY: Pon Xayasaeng	BORING #: SP-1	
BORING DIAMETER: 8"	DATE STARTED: 5/5/05	TIME:	
DRILLING CO.: Cascade Drilling Inc.	DATE COMPLETED: 5/5/05	TIME:	
CSI LIC. #: 717510	TOTAL DEPTH OF BORING: 19'		
DRILLER: James	DEPTH TO GROUNDWATER:		
HAMMER WGT.: lbs. HAMMER DROP: inches	SURFACE CONDITIONS: Dirt		

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
10	GP	4				Gravel w/Sand	brownish	Wet	Med			
11	GP	4				60%G, 35%S, 5%F	gray					
		4										
12	GP	6				Same		Wet	Med.			
		6				Med - coarse	Sand					
13	GP	7				gravel						
		6				Gravel w/Sand	same	wet	Med			
14	GP	7				70%G, 25%S, 5%F						Bentonite 13'-15'
		7				Med. Gravel						
15	GP	8				Gravel w/Sand	Same	wet	Med			
		12				50%G, 45%S, 5%F						
16	GP	7										
		9				same	Same	wet	Med			Sand 15'-19'
17	GP	10										
		10										
18	GP	10				same	Same	wet	Dense			
		11										
19	ML	10				Silt w/gravel	light brown	moist				
20												
21												

Grout 1.5'-13'

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 1
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xaysaeng	BORING #: SP-2
BORING DIAMETER: 8"		DATE STARTED: 5/5/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/5/05	TIME:
CSI LIC. #: 717510		TOTAL DEPTH OF BORING: 19.5'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1												
2												
3												
4												
5												Grout 1.5'-13'
6												
7												
8												
9												
10												
11												
12												
13												
14	GW		5			Silty Gravel w/Sand 20%G, 30%S, 50%F	grey	Wet				Bentonite 13.5'-15.5'
			5									
15			5									
	GW		7			Same	grey	wet				
16			8									
			7									
17	GW		10			Same	grey	wet				Sand 15.5'-19.5'
			12									
			9									
18	GW		10			Same	grey	wet				
			12									
19			15									
20												
21												

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 2
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xayasaeng	BORING #: SP-3
BORING DIAMETER: 8"		DATE STARTED: 5/5/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/5/05	TIME:
C57 LIC. #: 717510		TOTAL DEPTH OF BORING: 25'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
15	GW		8			Well graded gravel w/sand 60%G, 35%, 5%F	Dark Grey	Wet		ODOR		
16			9									
			6									
17	GW		6			Same	same	wet				
			7									
18	ML		7			Silt w/sand	light brown	wet		↓		
			8			Well graded gravel	Dark Grey	wet				
19	GW		6			w/sand						
			6			50%G, 40%S, 5%F						
20			7			No recovery						Bentonite 19'-21'
			6									
21			5									

Grout 1.5'-19'

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property	PROJECT NO.: 025980500/	Sheet 2 of 2
	LOGGED BY: Pon Xayasaeng	BORING #: SP-3

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
22	GW		9			Well-graded	Dark Grey	Wet		ODOR		
			10			gravel w/sand						
			9									Sand 21'-25.5'
23	GW		10			same	Dark Grey	wet				
			9									
24			9									
	GW		10			same	Dark Grey	wet				
25			10									
			9			Clay	light brown	wet				
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 2
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave.	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xayasouvong	BORING #: SP-4
BORING DIAMETER: 8"		DATE STARTED: 5/5/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/5/05	TIME:
C57 LIC. #: 717510		TOTAL DEPTH OF BORING: 24'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1												
2												
3												
4												
5												
6												Grout 1.5'-18'
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18			7			Refer to MW-4 boring log		wet		0.0		
19			8									Bentonite 18'-20'
			7									
20			10			Refer to MW-4 boring log		Wet				
			9									Sand
21			11									

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property	PROJECT NO.: 025980500/	Sheet 2 of 2
	LOGGED BY: Por Xayasaeng	BORING #: SP-4

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
			7			Sand w/gravel	Dark Grey	wet				
22	SP		7			25%G, 70%S, 5%F						
			8									Sand 21'-24'
23	SP		9			same	Dark Grey	wet				
			7									
24	CL		6			Clay w/gravel	light brown	dry				
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 2
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xayasaeng	BORING #: SP-5
BORING DIAMETER: 8"		DATE STARTED: 5/5/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/5/05	TIME:
CSZ LIC. #: 717510		TOTAL DEPTH OF BORING: 25'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
18			10			Refer to MW-4	Dark Grey	wet				
19	GW		8			or B-1 boring logs						
			7									
20	GW		10			Same	Dark Grey	wet				Bentonite 19-21'
	SM		7			Silty Sand	light brown	wet				
21			8									

Grout 15'-19'

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property	PROJECT NO.: 025980500/	Sheet 2 of 2
	LOGGED BY: Por Xayasaeng	BORING #: SP-5

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
22	SW		9			Sand w/gravel	Dark brown	Wet				
			9			25%G, 70%S, 5%F						
			7									
23	SW		9			Same	Dark brown	wet				Sand 21'-25'
			9									
24			9									
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 2
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xaysaeng	BORING #: SP-6
BORING DIAMETER: 8"		DATE STARTED: 5/5/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/5/05	TIME:
C57 LIC. #: 717510		TOTAL DEPTH OF BORING: 24'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
18	GP		8			Gravel w/Sand	Blueish	WET		Strong		Bentonite 17'-19'
19	GP		8			60/6, 35/S, 5/F	Grey			Odor		
			8			med. Gravel						
20	GP		8			Same	Same	WET				Sand 19'-24'
			7									
21			8									

Grout 1.5'-17'

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property	PROJECT NO.: 025980500/	Sheet: 2 of 2
	LOGGED BY: Pon Xayasaeng	BORING #: SP-6

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
			9			same		wet		0.0		
22			6							1		Sand 19-24'
			7									
23			10			same						
			7									
24			7			Clay	light brown	moist		↓		
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 1
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xayasaeng	BORING #: SP-7
BORING DIAMETER: 8"		DATE STARTED: 5/4/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/4/05	TIME:
C57 LIC. #: 717510		TOTAL DEPTH OF BORING: 19'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: Inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1												
2												
3												
4												
5												
6												
7												Grout 1.5'-12'
8												
9												
10						Drillers Note: Sand & Gravel						
11												
12												Bentonite 12'-14'
13												
14												
15			8			Sandy silt w/gravel	Blue w/brn blue	moist				
16	ML		9									Sand 14'-19'
			10									
17			10			Sand w/gravel	gray	wet				
	SP		10									
18			10									
			8			Clay	gray	moist				
19	CL		11									
			9									
20												
21												

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 1
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xaiyasaeng	BORING #: SP-8
BORING DIAMETER: 8"		DATE STARTED: 5/3/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/3/05	TIME:
CSZ LIC. #: 717510		TOTAL DEPTH OF BORING: 21'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: Inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
15	SP-SW		9			Sand w/silt & gravel 20% G, 70% S, 10% F		moist		0.0 ppm		Bentonite 14'-16'
16			8									
			7									
17			10			Same		wet				
			11									
18			10									Sand 16'-21'
	GP-GW		10			gravel w/silt & sand 60% G, 30% S, 10% F		wet				
19			13									
			12									
20	CL		11			Sandy lean clay w/gravel						
			14									
21			16									

Grout 1.5'-14'

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 1
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xaysaeng	BORING #: SP-9
BORING DIAMETER: 8"		DATE STARTED: 5/3/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/3/05	TIME:
CSZ LIC. #: 717510		TOTAL DEPTH OF BORING: 21.5'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
15	SW-SM		10			Sand w/gravel and silt	grey blue	wet				
16			8									Bentonite 15.5'-17.5'
			10									
17	SW-SM		8			same						
			8									
18			8									
	SP		9			Sand w/gravel	grey blue	wet				
19			8			20% G, 75% S, 5% F						
			11									Sand 17.5'-21.5'
20	GP		10			Gravel w/ Sand	grey blue	wet				
			12			40% G, 35% S, 5% F	brown					
21			12									

Grout 1.5'-15.5'

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 1
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xayasaeng	BORING #: SP-10
BORING DIAMETER: 8"		DATE STARTED: 5/3/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/3/05	TIME:
C57 LIC. #: 717510		TOTAL DEPTH OF BORING: 21'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
15	GC		8			Clayey gravel w/sand	Brown			0004		
16			7									Bentonite 15'-17'
			7			50% G, 20% S, 30% F	Blue Black					
17	SM		8			Silty Sand						
			9			10% G, 60% S, 30% F						
18			9									
	GP		9			Gravel w/sand	Dark brown					
19			10			60% G, 35% S, 5% F						Sand 17'-21'
			10									
20	GP		10			Same						
			10									
21			10									

Grout 1.5'-15'

WINZLER & KELLY
CONSULTING ENGINEERS

BORING LOG

PROJ. NAME: Wiggins Property	PROJECT NO.: 0259805001		Sheet 1 of 1
METHOD OF DRILL: 8" Auger	LOCATION: 3454 Santa Rosa Ave		
SAMPLER: Split Spoon OD: ID:	LOGGED BY: Pon Xayasaeng	BORING #: SP-11	
BORING DIAMETER: 8"	DATE STARTED: 5/3/05	TIME:	
DRILLING CO.: Cascade Drilling Inc.	DATE COMPLETED: 5/3/05	TIME:	
CSI LIC. #: 717510	TOTAL DEPTH OF BORING: 16'		
DRILLER: James	DEPTH TO GROUNDWATER:		
HAMMER WGT.: lbs. HAMMER DROP: inches	SURFACE CONDITIONS: Dirt		

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1												
2												
3												
4												
5												Grout 1.5'-12'
6												
7												
8												
9						Some gravel on top						
10			8			Silt w/Clay	Blue grey	moist				
11	ML		7									Bentonite 10'-12'
			7									
12			5			Same	Blue grey	moist				
	ML		8									
13			10									
			6			Silty Clay	Blue grey	moist				
14	CL		6									Sand 12'-16'
			7									
15			13			Silt w/Clay	Blue grey	moist to dry				
	ML		12									
16			10									
17												
18												
19												
20												
21												

WINZLER & KELLY
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BORING LOG

PROJ. NAME: Wiggins Property		PROJECT NO.: 0259805001	Sheet 1 of 2
METHOD OF DRILL: 8" Auger		LOCATION: 3454 Santa Rosa Ave	
SAMPLER: Split Spoon	OD: ID:	LOGGED BY: Pon Xayasaeng	BORING #: SP-12
BORING DIAMETER: 8"		DATE STARTED: 5/3/05	TIME:
DRILLING CO.: Cascade Drilling Inc.		DATE COMPLETED: 5/3/05	TIME:
C57 LIC. #: 717510		TOTAL DEPTH OF BORING: 25.5'	
DRILLER: James		DEPTH TO GROUNDWATER:	
HAMMER WGT.: lbs.	HAMMER DROP: Inches	SURFACE CONDITIONS: Dirt	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
15	CL		10			Clay	greyish w/blue	wet				
16	CL		12									
			12									
17	CL		10			Clay w/silt	grey	wet				
			11									
18			12									
	ML		9			Silt w/clay	greyish w/blue	wet				
19			12									Bentonite 18'-20'
			14									
20	CL		10			Clay w/silt	blue	wet				
			10									sand
21			10									

Grout 1.5'-18'

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BORING LOG

PROJ. NAME: Wiggins Property	PROJECT NO.: 0259805001	Sheet 2 of 2
	LOGGED BY: Pon Xayasaeng	BORING #: SP-12

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
22	ML		15			Silt	Blue	wet				
			16									
			14									Sand 20'-25.5'
23	ML		12			Silt w/clay	Blue	wet				
			15									
24			16									
			19			No recovery						
25			21									
			20									

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